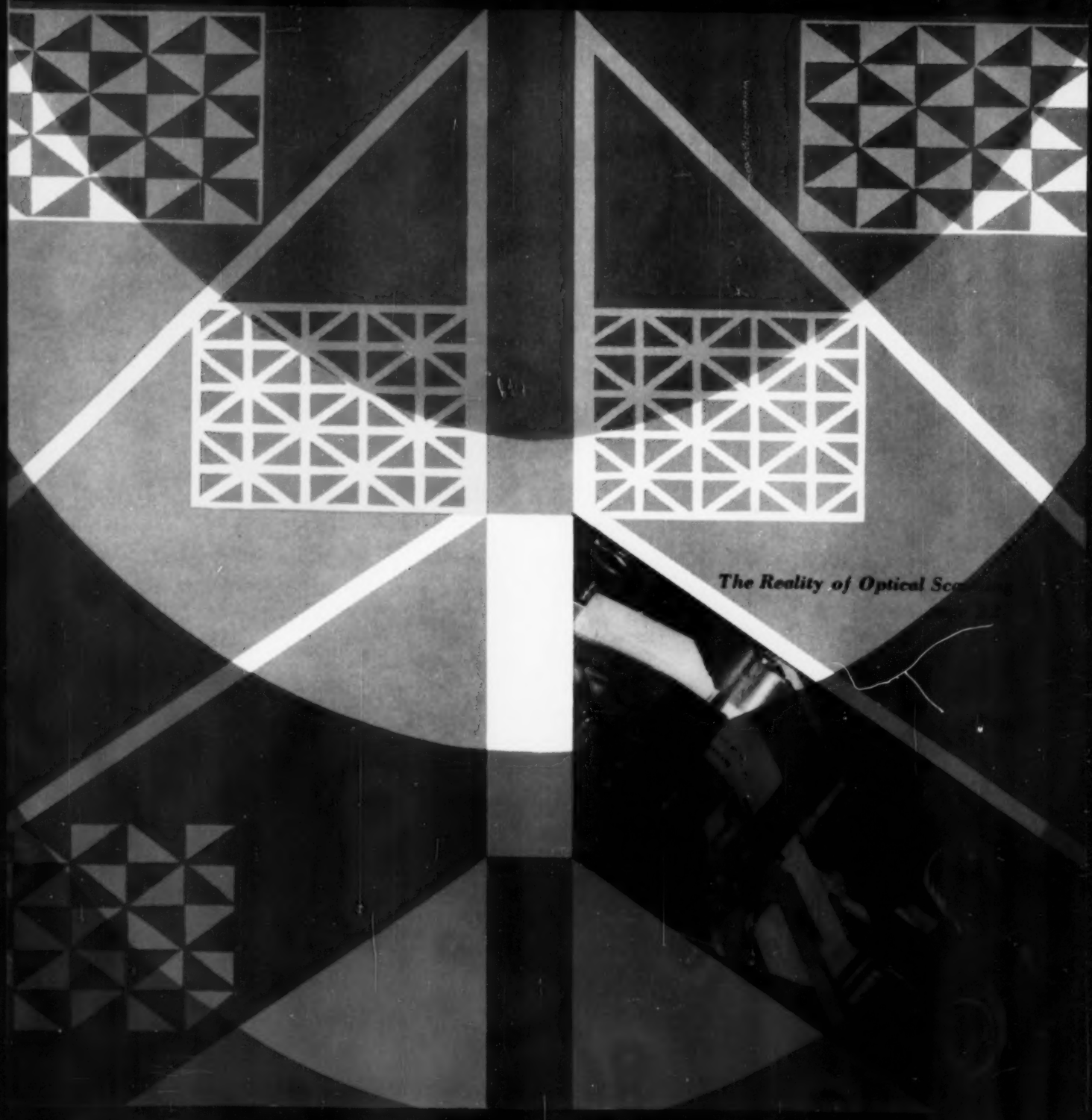
September 1960

MANAGEMENT *and* BUSINESS AUTOMATION



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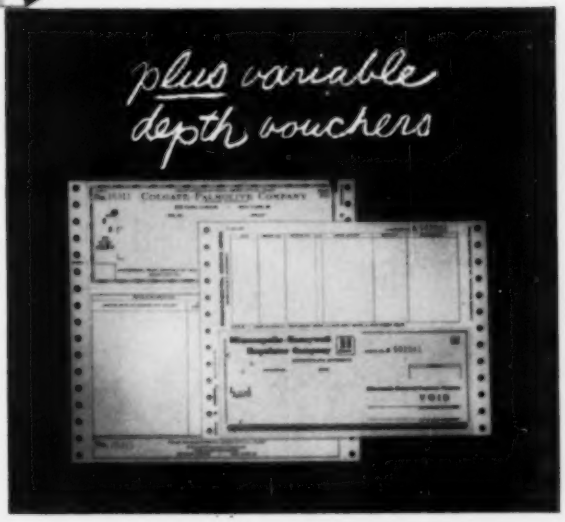

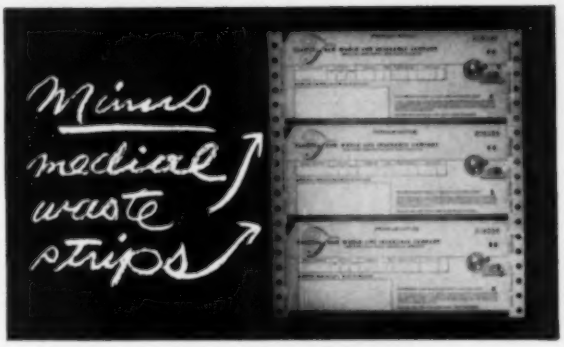

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MORE and more businesses are using complex computers and other electronic machines to process current facts and figures.

Where plants, warehouses, branches or offices are located in different cities and states, there is increasing need for a quick, economical way to transmit payroll, inventory, billing and other data from place to place.

This is especially true where the policy is toward decentralization of various activities.

In serving this communication need, the Bell System has come up with a new and extremely flexible method called DATA-PHONE service.

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The customer pays for each Data-Phone call just like a Long Distance call for any period he wants.

THUS, in addition to our teletypewriter service, designed for low-speed operations, and our leased-line offerings allowing literally any speeds, we can now offer the added flexibility of our vast Long Distance telephone network for data transmission.

In providing the communication lines and Data-Phones, the Bell System is working right along with manufacturers who are developing the business machines to complete the service.

It all adds up to an interesting and exciting opportunity to render a new data communications service for our business customers.

A GREAT FUTURE

It is not improbable, within the next decade, that the amount of communication between electronic business machines in different cities will be as large as telephone communication between people.

BELL TELEPHONE SYSTEM

MANAGEMENT *and* BUSINESS AUTOMATION

September, 1960
Vol. 4, No. 3

New ideas, developments, applications, results, and the human impact of business automation in commerce, industry and government.

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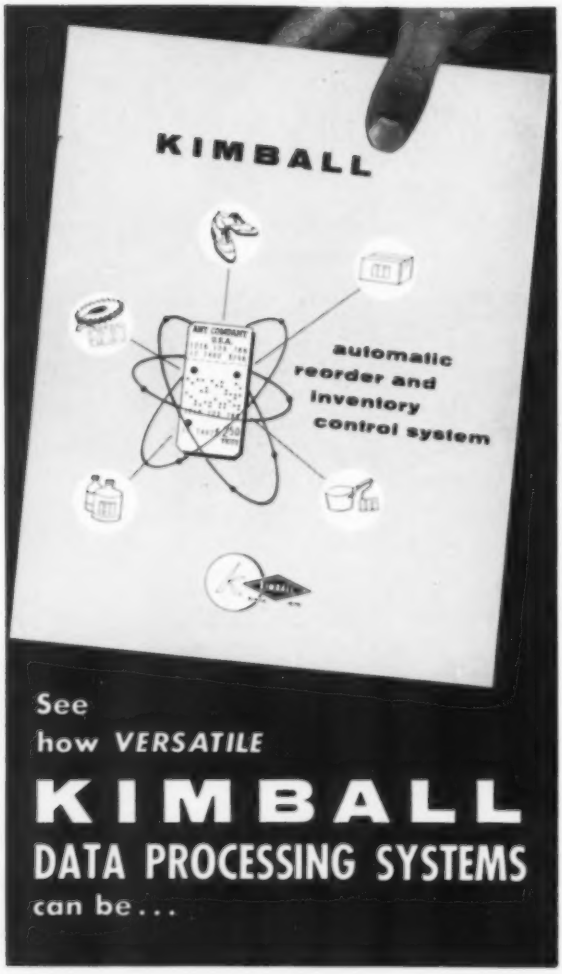
MANAGEMENT and BUSINESS AUTOMATION is published monthly and © copyrighted 1960 by The Office Appliance Co., 600 W. Jackson Boulevard, Chicago 6, Illinois. Accepted as controlled circulation publication at Chicago, Illinois, and Lafayette, Indiana.
Subscription Rates: United States, one year, $5; two years, $8. Canada, Pan American and foreign, one year, $12; two years, $20. Single copies: U.S.—75c; all other countries—$1.50.
Change of Address: Send new and old addresses (preferably with an MBA label), including postal zone numbers, to Circulation Department, MANAGEMENT and BUSINESS AUTOMATION.
Receipt of changes by the 10th of the month will assure correct addressing of next issue.
Postmaster: Send notices to MANAGEMENT and BUSINESS AUTOMATION, 600 W. Jackson Boulevard, Chicago 6, Illinois.



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Scanning the Issue

Working in the data processing division of the National Security division during World War II, a young chap named David H. Shepard became quite concerned over the tremendous amount of detail work involved in preparation of input for the ADP systems—and decided to do something about it. What he did is today making data processing history. **Optical Scanning—An Unlimited Horizon,** page 22. Shepard set up a workshop in the attic of his home, and along with a friend, Harvey Cook, Jr., developed the first machine that could recognize printed words and figures.

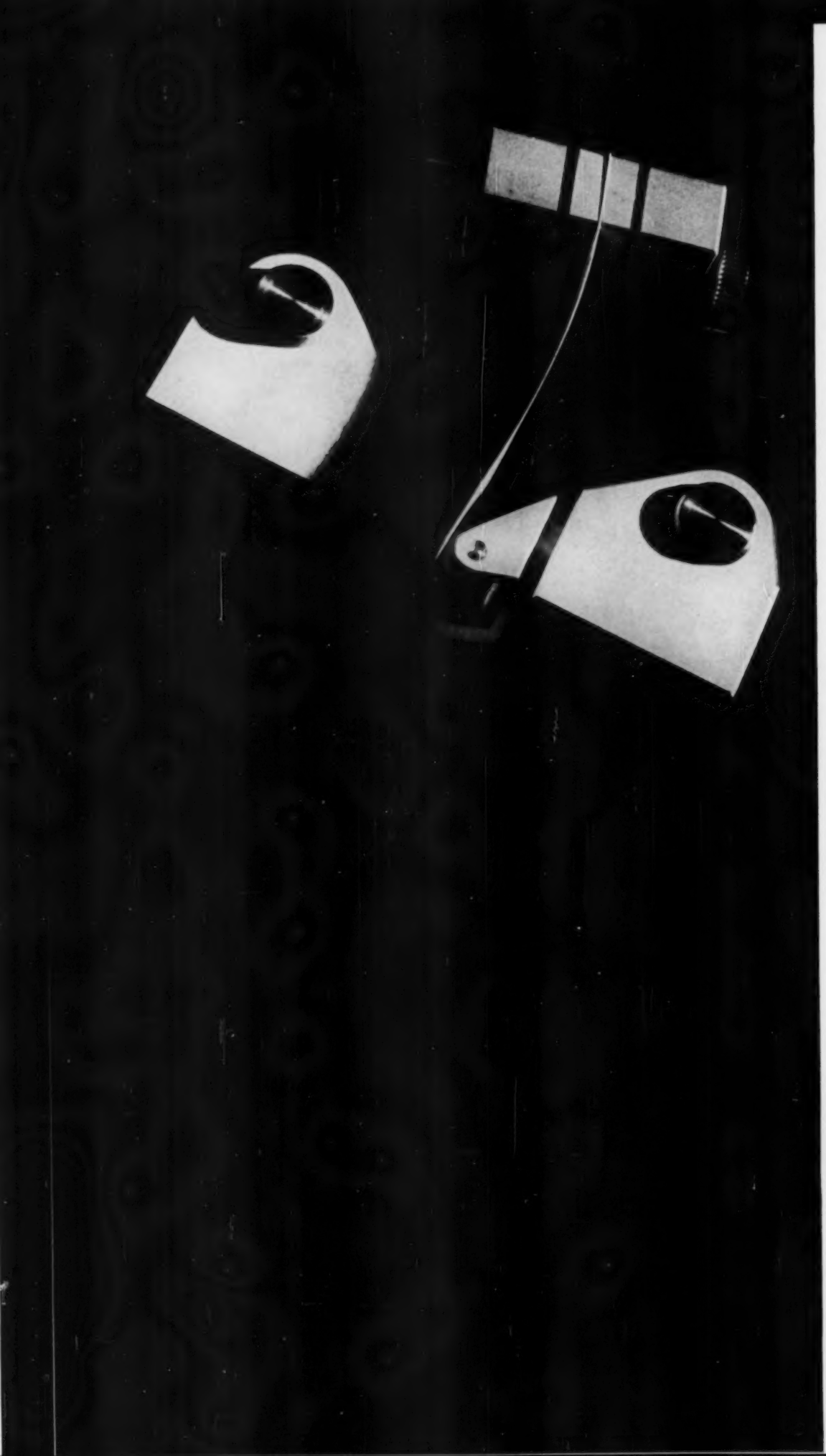
In the early fifties, Shepard, then 31, started making his own machines under the firm name of Intelligent Machines Research Corp. Production was at the rate of about one a week. Farrington Manufacturing Co., who introduced "Charga-Plate" service in 1929, bought the first machine in 1954. That was the beginning of a fabulous success story—and a new era in data processing.

This month's cover represents an abstract impression of optical scanning — designed especially for MBA by Chicago artist Leslie McKay.

John A. Beckett, Assistant Director of the Bureau of the Budget, highlights the pitfalls and progress of 10 years of automatic data processing in his lucid article, **The Government Evaluates Its Data Processing Progress,** page 30. The article is an extension of his remarks before the Symposium on Integrated and Automatic Data Processing Systems, held by the Federal Government Accountants Association. His information, however, has as much value to anyone in business data processing as it does to his fellow workers. Much of what Mr. Beckett has to say has long been considered fact—but without the conclusive evidence he is able to present. Hindsight, he points out, has contributed enough information about what not to do. The Government is now interested in what it must do during the next 10 years.

A new look in records storage has been achieved at the Baton Rouge Refinery of Esso Standard by utilizing "palletized" storage and a fork-lift truck as a mechanical "file clerk." An interesting solution to an old problem is **Records Get A Lift From Esso Standard,** page 36.

Management at Minnesota Mutual Life Insurance Co. was willing to spend six years investigating and planning to bring about **The Consolidated Functions Approach,** page 40, a working electronic data processing system which has been successfully applied to a major group of paperwork operations. The estimated savings goal—$100,000 a year!



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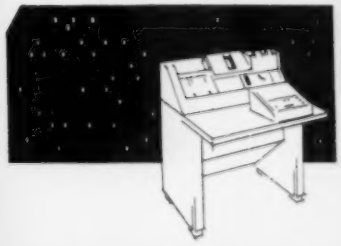
This special backing makes the IBM card a *value* unsurpassed in the industry... and represents one more example of the way IBM helps you to enjoy Balanced Data Processing.



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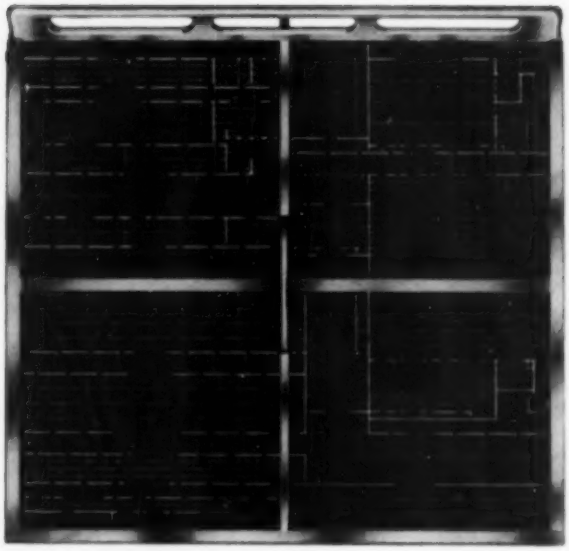


all panels are not the same!

This is a MAC Panel control panel, a product precisely engineered for use with IBM punched card and data processing equipment. And, there is a difference between this panel and others.

If you place another make of panel next to this one, both may look the same; lift still another panel and compare with this one and it may even feel the same.

Where, then, does the difference lie? Why is this MAC panel—or any MAC Panel product, for that matter, different from others? Wouldn't other panels be just as good if, in one instance, one had the same sharp appearance, another possibly felt as light and as easy to handle?

No! It takes more than just one or two qualities to make a good control panel. If other panels had all of the qualities, they would be just as good. But here's the important difference. *They don't!*

MAC PANEL MAC PANEL COMPANY

Inherent Quality

MAC Panels have all of the qualities that facilitate data processing procedures and insure accuracy. You can see some of these qualities: the sharp, legible diagram printing, the bright, burnished framing. And, you can feel the featherweight ease of handling. But it's the inherent features . . . the hidden facts that really tell the MAC Panel quality story.

FRAMES MAC Panel frames are made of the finest aluminum . . . extruded, then machined to closer tolerances than those normally required. In addition to providing a lighter, easier to manage panel, the use of aircraft aluminum adds assurance against bending, warping, or denting.

MAC even goes one step further. All frames are burnished to a high gloss. It looks good, but that's not the main reason. Burnishing is the best method for removing surface impurities. And because it is not a coating that can chip off, burnishing eliminates the possibility of excessive wear, rough edges, and a pitted, corroded appearance caused by oxidation.

Method and Metallurgy

HANDLES Here is an area of panel engineering that MAC considers important enough to utilize only the best resources. All MAC Panel handles, except the 402-3, are completely die-cast of modern aluminum alloys by people who know metals and casting methods. Complete casting means each top bar-handle is a one-piece unit. Handles merely screwed to the top bar create additional stress points where breakage is more likely to occur. These stress points can be best eliminated by a fully die-cast one-piece top bar-handle.

And, speaking of stress, why the "hump" in the middle of the 407 panel? For added strength. It's as simple as that . . . an "insurance hump". Without it, the chances of bending, breaking and warping are increased.

The Heart of the Matter

INSERTS These are the hearts of panels and for that reason MAC gives painstaking attention to even the minutest details. The insert in every panel you receive from MAC is completely molded of hard, durable, and proven material in MAC Panel's own molds. Not a paper-based substitute, but pure, shock and warp-resistant phenolic. The holes are molded in at the same time. Not drilled later on.

MAC Panel research and testing proves that a molded insert guarantees uniform thickness, controls the precise spacing and size of holes . . . and, what's more important, molding seals the walls of each hole so that constant use will not enlarge the hole or allow warp-causing moisture to seep in.

Baked-on Printing

PRINTING Sharp, legible, *lasting* diagram printing is essential for long life and ease of wiring. The white, silk screened printing on jet black MAC panel inserts provides easy reading contrast. After printing, each insert is literally baked under infra-red heat to bond the ink to the insert, insuring that the legibility will last. This protection against chipping or scratching caused by constant wiring and re-wiring lengthens the life of your panel—increasing its value for you.

ASSEMBLY Quality control extends to the assembly of MAC panels. Strain-resistant, cadmium plated steel screws lock the panel parts together preventing misshaped panels. Electric torsion screw drivers firmly seat each screw with controlled pressure. Where extreme accuracy counts, set screws holding the insert into position are hand adjusted to assure proper tension.

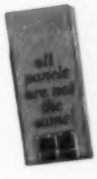
TESTING In addition to inspections all down the line, every panel undergoes a thorough, final inspection. Flatness. Squareness. With wires and without. Every MAC panel is fitted in the enclosure mechanism from the machine for which it is designed. They're right before you use them.

PACKAGING Since all of the different parts that make up a MAC panel are the best, there's not much sense in skimping on packaging. Here, again, MAC Panel's research in conjunction with packaging specialists has nested MAC panels in the most effective packaging for maximum protection in transit. A panel is no better than the condition in which you receive it, and MAC Panel quality is guaranteed all the way.

What do These Differences Mean to You?

How, then, do you compare one panel with another? Not by sight or feel alone, but by knowing that the panels you use have all of the inherent qualities that assure reliability . . . by knowing that it is the hidden, built-in features of panels that can help your data processing operations.

These differences are the reason why MAC Panel Company continues to be America's leading independent control panel manufacturer. Be sure you use only the best. MAC panels.



Write today for this free booklet that shows you how important it is to know what to ask for when buying control panels. Better yet, ask your MAC Panel representative to demonstrate the benefits you get when you specify MAC panels and wires.

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RANDOM ACCESS

Information bits from the Editor's memory file

Mourning Becomes Electra

Though no one is talking, a computer had more than a minor role in the Electra fiiasco which resulted in a loss to Lockheed Aircraft of some $24,456,000—plus a far greater loss in human lives. The dollar figure, described by Lockheed's board chairman, Robert E. Gross, as "The big jolt" was the total write-off due to the Electra modification program. The modifications resulted from structural weaknesses discovered in the craft after two tragic accidents.

Lockheed used a computer to electronically stage test flights of the Electra and simulate conditions that might be met in actual flight. These "computer" flight runs are supposed to enable designers to make basic structural changes in a plane without having to build the actual product and then go through an extended period of modification; a procedure that obviously failed in the Electra project.

The computer involved, a giant analog machine, is a product of Computer Engineering Associates, Pasadena, Calif. Similar machines were used by Douglas and Boeing in the development of their huge jet liners. Gilbert D. McCann, director and developer of the computer, is reported as commenting only "that the faults have been corrected." Perhaps this incident will serve as a warning to those, particularly in the scientific field, who readily accept and preach the doctrine of "computer infallibility."

A First for Flora

Flora, a small southern Illinois town (population 6,000), will become the nation's center for computer statistics and 1961 Ford automobiles in September. Every registered vehicle owner will receive the loan of a new Ford for one week, and an IBM 305 RAMAC will analyze the drivers' reactions.

In conjunction with the survey, IBM will use the computer to "statistically explode" Flora as a typical buying community. The company has engaged Prof. Raymond Mack (no relation to RAMAC) of Northwestern University to prepare a list of 500 questions about the city and its people. This will be programmed into the computer, which in turn will provide the answers to the buying habits of Flora.

Solid State Ice Cream

It is doubtful that Dolly Madison, who is credited with introducing ice cream to the nation at a White House dinner in 1809, would recognize today's product. But that's another story. Now we learn that H. P. Hood & Sons, a Somerville, Mass., ice cream company, is making the stuff with a computer.

Recipes are figured quickly and accurately by an electronic computer which turns out punched cards. The cards are fed into a slot and automatic equipment does the rest.

We have not tasted the Hood's product, but if it's anything similar to most of the stuff posing as ice cream on today's market, we can hardly chalk this up as one of the computer's better accomplishments.

4

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. . . REFOLD AUTOMATICALLY
. . . MINIMIZE DOWNTIME WITH UNBROKEN JUMBO PACKS

* In accordance with United States Testing Company Report #67350.

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from the

Publisher's Desk

THE computer department salary report that appeared in our June issue generated a demand for extra copies far beyond our expectations. After three months the demand continues, but the supply has long since been exhausted.

Because of the tremendous interest on the part of the participants of the study we should have anticipated such a demand. When a repeat project is undertaken next year we'll be better prepared.

Although the June issue is no longer available, the survey results are now available in another form . . . as an integral section in a book which is just coming off the press. Entitled "Determining Salaries for Computer Personnel," this is actually a working handbook designed to set up complete procedures for establishing job descriptions, pay grades, and for proper administration of the salary program. It is described in greater detail on page 45.

Editing this book is one of the country's foremost authorities on salary administration, Philip H. Weber. Phil conducted the computer salary study for MBA as well as the machine accounting salary survey in 1959. Already he is hard at work on a more elaborate salary administration service applicable to each major industry.

We've been told that this continuing salary research program is one of the most valuable contributions to orderly industry progress that can be made at this time. We are gratified, naturally, that interest is so high. These projects are time consuming and costly but as long as they are filling a well-expressed need they will certainly continue, and on an even greater scale than has been possible in our first two studies.

For those who want to participate in future salary surveys concerning either computer or machine accounting installations, just let us know and you can be sure that Phil Weber will contact you in the months ahead.

Charles W. Gilbert

MANAGEMENT and BUSINESS AUTOMATION

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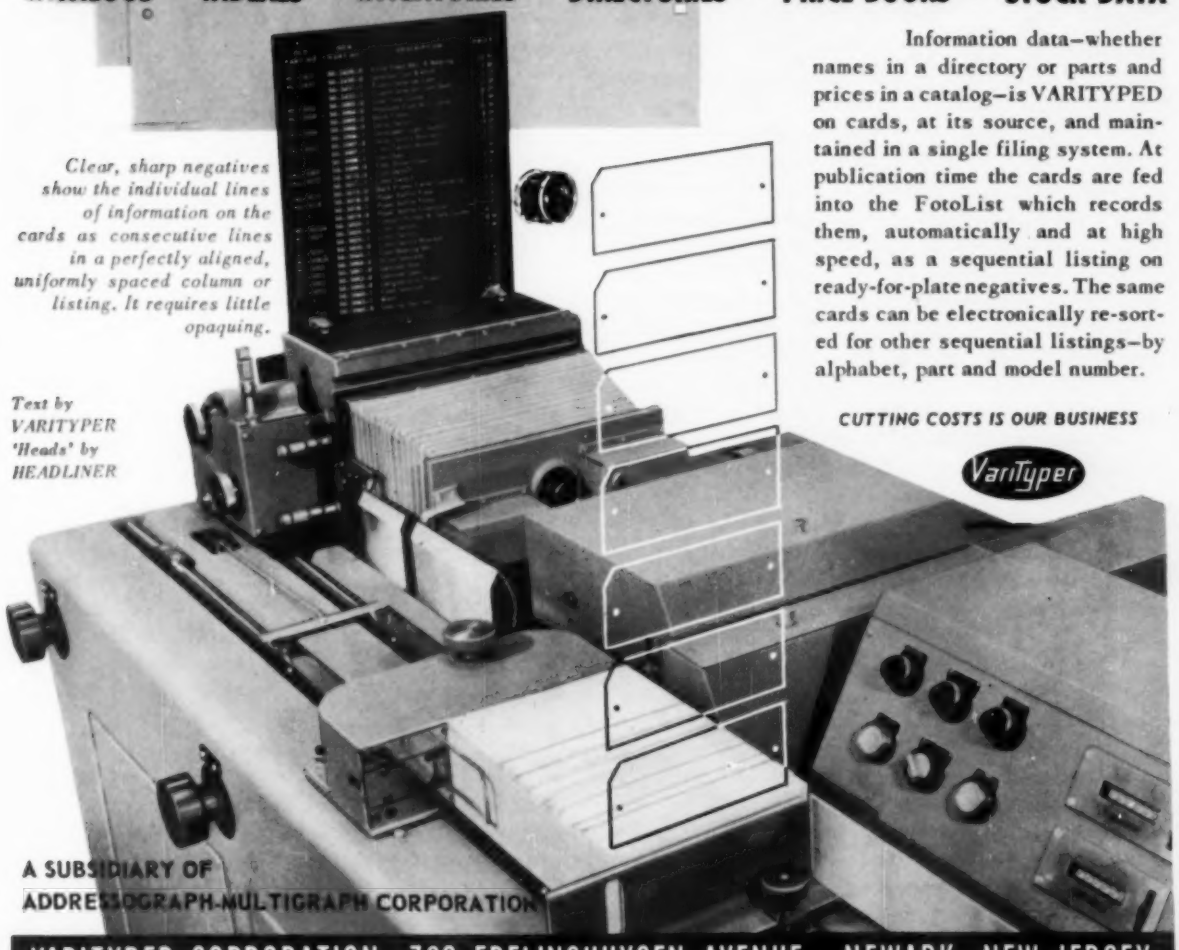

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Plans Completed For International Systems Meeting

Keith DeLashmutt, R. R. Donnelley & Son, Chicago, is the 1960-61 president of the SPA.

General Chairman of the ISM is Charles B. Shafer, New York Life Insurance Co.

PLANS for the most extensive program in the history of International Systems Meetings have been completed by the Systems and Procedures Association. Two hotels, the Biltmore and the Commodore, were necessary for accommodations of the meeting in New York City on October 10-13.

The major portion of the four-day program has been given over to some 65 seminars covering virtually every area of business activity. Sessions on Application of Operations Research, Input and Output Problems in EDP Systems, Effective Writing, Reports Management and Operational Management of Systems Departments are among those which should attract large audiences.

Tentative speakers for the general sessions now include J. Wilson Newman, president of Dun & Bradstreet, on Monday; John A. Beckett, Assistant Director, Bureau of the Budget, on Tuesday (Mr. Beckett has authored the article "The Government Evaluates Its Data Processing Progress" on page 30 in this issue); and Walter P. Marshall, president of Western Union Telegraph Co. on Wednesday.

The purpose of the sessions is to provide members with up-to-date knowledge, firsthand experience and on-the-spot demonstrations of systems and procedures techniques—and their relationship to management objectives.

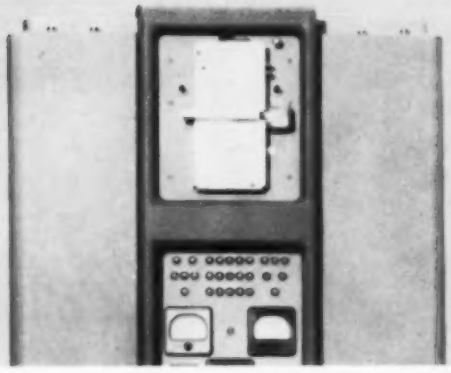
Among the highlights of this broad program are technical seminars both for the management executive responsible for the systems function and for the trained systems and procedures man. Management seminars are for managers and administrative executives concerned with systems and procedures. An electronics seminar is arranged for those interested in the electronics applications of systems in their companies.

For the benefit of newcomers to the systems field who need the fundamentals and as review for more experienced systems people, a System Panorama is offered. Industry Seminars bring together representatives of various companies within an industry to discuss this important area. To explore with educators the whole subject of systems and procedures work and its opportunities as a career an Educators' Conference is provided.

In a new approach, the fourth day of the meeting will be given over to chapter activities and programs. International officers and committee chairmen will discuss the responsibilities and goals of the individual chapters of the association.

Exhibits will be sponsored by Addressograph-Multigraph Corp., Bell Telephone Systems, Burroughs Corp., Collins Radio Co., Dashew Business Machines Inc., A. B. Dick Co., Eastman Kodak, Farrington Electronics, Friden Inc., General Time Corp., IBM, Minneapolis Honeywell, Monroe Calculating Machine Co., RCA, Recordak, Remington Rand, Western Union Telegraph Co. and Wheeldex & Simpla Products Inc.

"Our study showed the Bendix G-15 computer will save us $100,000 a year"



WALTER T. JONES, JR.
MANAGER, COMPUTING AND ACCOUNTING DEPARTMENT
QUEEN KNITTING MILLS, INC.
PHILADELPHIA

Queen Knitting Mills has massive production and inventory control problems . . . the kind usually handled on medium to high-price computers. After a detailed study, however, Queen selected the low-cost Bendix G-15. *"It does the whole job for us,"* says Mr. Jones, *"at one-half the cost of competitive equipment."*

As one of America's largest manufacturers of women's summer sportswear, Queen Knitting Mills will save $100,000 per year by eliminating overstock and loss of sales due to understock. In analyzing the G-15, Queen considered these features:

EXPANDABILITY The G-15 is the only low-cost computer that provides magnetic tape units, and can accept paper tape punched by various office accounting machines. Addition of the G-15 Punched Card Coupler makes the computer the lowest-cost punched card computer system available. The basic G-15, however, is a complete operating computer. It comes equipped with an alphanumeric typewriter, a paper tape punch, and a photoelectric paper tape reader.

VERSATILITY & RELIABILITY There are more than 250 G-15's installed, handling an extremely wide variety of business and scientific problems. "Uptime" for all these machines has been better than 95%.

SPEED Queen's study showed the G-15 is faster than other computers in its price range. *Delivery speed* is excellent, too.

Write for complete details.

Bendix Computer Division
DEPT. U-20 LOS ANGELES 45, CALIF.

Bendix

For More Information Circle Reader Service Card No. 161

Letters

Dear Sir:

I read with interest your article, "National Survey of Computer Department Salaries" and would like to make reference to pages 21 through 24 and ask you where this information was obtained.

Since reading this article, I have talked to most of the companies and associations that have computers in the Washington area, and we have come to the conclusion that the information you have listed as to actual weekly salaries appears to be erroneous.

If this survey is based on the machines that are valued as high as a million dollars, that is one thing, and if that is correct, I feel you have an obligation to show the other types of computers, including the Univac 60 or 120. Also, I would like to know if you have information on the salaries paid by the Federal Government on the large computer operations.

Charles B. Buscher
Executive Secretary-Treasurer
National Alcoholic Beverage Control Association, Inc.

Ed. Note—The survey indicated an average monthly rental of $15,000 for computer installations. The average number of employes was 25, but some installations reporting ranged as high as 150 to 175 employes. As is usually the case, the established maximum high salary reflects the largest operation. There were no Federal Government installations reported.

Dear Sir:

Referring to the National Survey of Computer Department Salaries published in the June, 1960 issue of MBA, the National Office Management Association's National Data Processing Committee has asked me to congratulate you on a job well done.

The National Data Processing Committee has as one of its objectives the conducting of a Data Processing Salary Survey. At a recent meeting your published efforts were discussed quite thoroughly, and it was the consensus that NOMA could do no more than duplicate, if possible, your fine effort.

There are approximately 400 companies in NOMA that have members either working in or responsible for automation. Therefore, the information you provided in your publication would be of vital interest to those particular NOMA members. May we have your permission to use the survey in an issue of our Systems & Procedures Data Processing Technical Quarterly?

Charles E. Grinder
Staff Director, Technical Division
NOMA

Ed. Note—Permission granted!

TWO NEW AUTOMATIC COLLATORS BY THOMAS

New 50-Station Collator

Offers more features at a lower price than any other high volume collator on the market.

- Accurately collates, counts and staggers 25,000 sheets per hour...stitches at a slightly lower rate
- Exclusive push button programmer permits different collating jobs to be run at the same time
- Occupies only 17½ square feet of floor space
- Loads in less than 7 minutes...no vacuum systems or fans to adjust, no need to compensate for weights or finishes of stock
- Handles sheet sizes from 7" x 8" to 11" x 14" in almost every weight and finish
- Foolproof miss and double detector stops machine instantly, preventing errors in finished sets

a product of Thomas Collator Industries, Inc.
a subsidiary of Thomas Collators Inc.

Dear Sir:

In March 1960 you published a cartoon which reminded me of one that I had published in September 1953 in Punch magazine (the official publication of the now defunct National Tabulating Management Society).

Of course, if I had it to do over again—I would change the Tab Operator to a Programmer. I would put him in a long coat (for leaning against machines) and have pockets all along the bottom for punched cards. A THINK sign would be printed on the back and cowboy chaps (formerly on the legs for carrying tab boards and empty trays) would be cut up and placed on the elbows and knees since programmers are always leaning and kneeling.

My cartooned programmer would have to have more room in that plexiglass helmet (to keep out noise and allow for brain expansion) he'd have filled that out a lot more since 1953. Foam rubber would stay on the shoes, but roller skates would be added. In fact, they would have been a good idea seven years ago.

You are to be congratulated for presenting such an interesting magazine for this complex field.

Lois L. Powell
Data Processing
The Budd Company

Dear Sir:

I have just read, with considerable interest, the article, "A Hard Look At Efficiency Experts," in your July 1960 issue.

This article is quite amusing and does contain a few facts, but certainly is misleading and will probably give the wrong impression to many potential clients.

I have been a consultant for the past 10 years and have never told a client that I know more about his business than he does. I do, however, have a wide variety of business experiences which can be used to assist him with his particular problems.

In addition, I am able to see obvious possibilities as an outsider that he cannot see because he looks at them every day. I also have the necessary time to devote to a particular problem while he may be most capable but too busy.

In order to show you the many advantages of using consultants I would have to write many pages and this is not my immediate purpose. However, there is one point that Mr. Parkinson brought up that is unfortunately true.

Many persons are selling their services as consultants today when they actually are not qualified for this very important and costly func-

Continued on page 18

New 12-Station Collator

Provides fully automatic collating without the penalty of high price or space waste.

- Automatically collates, counts, crisscrosses or staples 6000 sheets per hour, regardless of the number of sheets per set
- All 12 stations can be loaded in a minute. No adjustments necessary for weight or finish of stock
- Each station will handle approximately ½ ream of 3" x 5" to 11" x 14" stock in most weights and finishes
- Any station can be eliminated simply, easily... at the flick of a lever
- Automatic miss and double detectors stop machine instantly... provide positive accuracy
- Takes only 2½ square feet of floor space... only 44" high

For complete information on the many ways you can speed up your collating operation and substantially reduce costs with either of these two new collators, write today to Dept. GG34.

Thomas Collators Inc.
World's Leading Manufacturer of Collating Equipment
100 Church Street, New York 7, N. Y.

For More Information Circle Reader Service Card No. 162

Savings are automatic, too with "AUTOMATABELS"

Start saving up to 10% *right now* with Ever Ready's new pin-feed automatic labels. These amazingly inexpensive "Automatabels" have refashioned automatic labeling and proved a considerable savings for banks, insurance firms, schools, government agencies and virtually every type of business. In three sizes, thrifty "Automatabels" will operate smoothly and effectively in *every* business machine with a pin-feed platen or tractor feed, and in addition, are used extensively in convenient roll form for all platen feed typewriters. "Automatabels" are pressure sensitive and will adhere to almost anything. Their adhesive provides a smooth-as-glass surface when applied to tabulator cards, assuring perfect operation. Ever Ready's 50 years of label experience guarantees the finest quality at quantity prices. Send coupon below today for more detailed information on "Automatabels" and Ever Ready's Label Idea Kit. "Automatabels" come in roll form and fanfolded packs.

EVER READY LABEL CORPORATION

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leaders in label printing for almost half a century.

Gentlemen:

- ☐ Please send me detailed information regarding "Automatabels."
- ☐ Please send me actual samples of your "Automatabels."
- ☐ Please send me Ever Ready's Label Idea Kit.

NAME ..... TITLE .....

COMPANY .....

STREET ADDRESS .....

CITY, ZONE, STATE .....

For More Information Circle Reader Service Card No. 163

Letters

Continued from page 17

tion. It is my opinion that consultants should have to pass rigid tests, as in the case of C.P.A.s, and show qualified registration before being permitted to practice on the public.

Harvey W. Protzel
Consultant

Dear Sir:

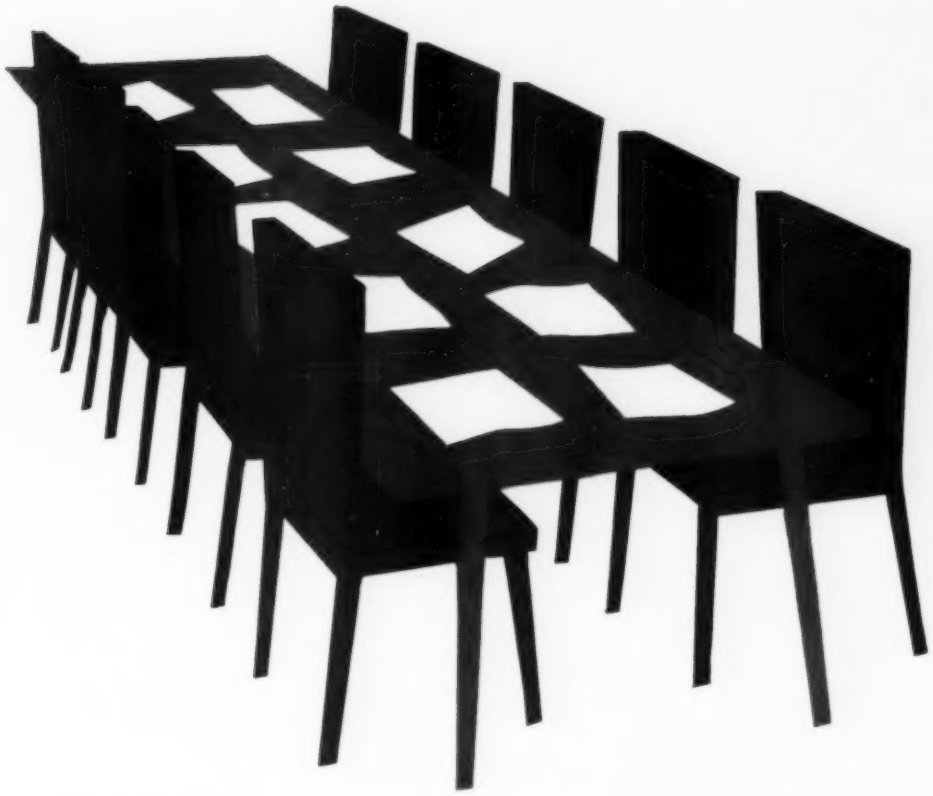
We read with considerable interest your July editorial, "An Integration Problem," and agree in general with your views. We would like to expand on the thoughts expressed in the editorial and suggest a somewhat different concept of integration.

Instead of integrating functions (management according to your interpretation), we advocate an information-oriented approach in which data is collected from all functional areas, (i.e., production, sales, credit, etc.), processed in terms of the predetermined "unity of purpose"— which takes the total view and considers the management information needs of the entire organization as well as each functional area—and then makes the results available to all functions.

We believe that this information-oriented approach to integration has advantages over functional integration. First, it avoids the problem of organizational realignment since it is not based on organization but focuses on information needs. It will therefore be more acceptable to management. Second, information heretofore unavailable on a timely basis or unknown to a functional area can now be made available and therefore can be considered by it in terms of its effect on the larger organizational purpose. Thus, electronic data processing will become a true tool and service for management.

We recognize, of course, that organizational realignments will be required with the introduction of large scale computing systems. However, we believe that such organizational realignments in the future will be based on data flows and management information re-

Continued on page 20



Today's low-cost way to automate your sales analysis is with Keysort Data Processing

For fast, accurate order and sales analysis, in-process inventory, job costing – for any number of vital management controls–Keysort is the data processing system to use.

The reasons are many. No restrictive procedures; minimum training; remarkable economy; simplicity of installation and operation.

Keysort, in fact, is the only automated data processing system flexible enough to fit your business as it stands *and* as it grows. It is the one system adaptable and affordable to companies of every size.

With Keysort, you use simple punched cards – mechanically created for fast, easy sorting. Figures are automatically tabulated and results summarized direct to reports without transcribing.

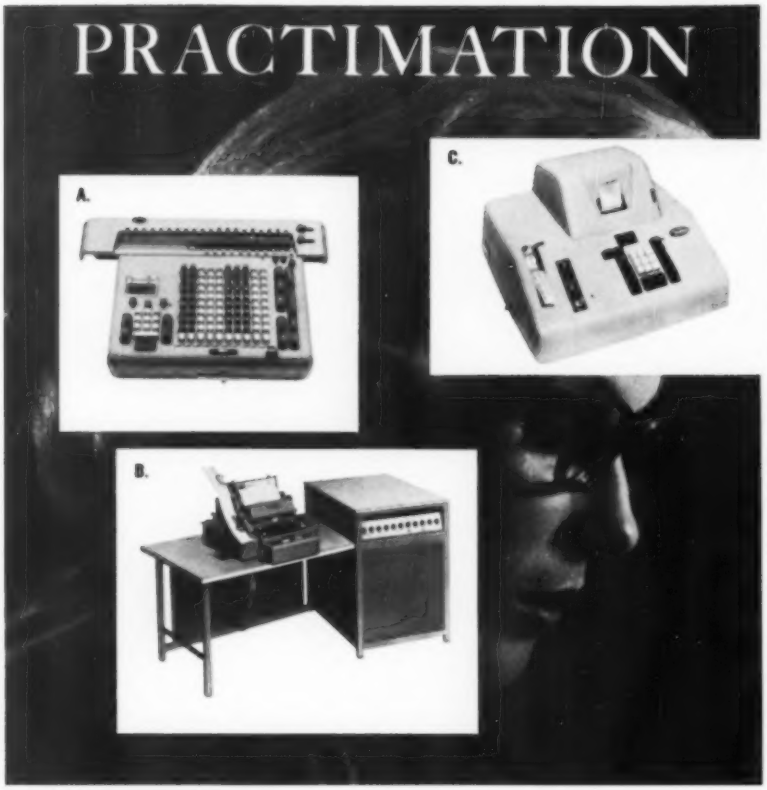
Result: Keysort automates your data processing to give you the meaningful on-time information you need for complete control of your business and profits. Monthly, weekly, daily. And at truly low cost.

Your nearby Royal McBee Data Processing Systems Representative has had a wealth of experience in solving management control problems. Working with you, with your systems and procedures experts, he can offer helpful advice about a low-cost Keysort system tailored to your individual requirements. Call him, or write us at Port Chester, N. Y.– indicating the applications in which you are interested–and we will be happy to supply you with actual case histories from our files.

ROYAL McBEE · *data processing division*

NEW CONCEPTS IN PRACTICAL OFFICE AUTOMATION

For More Information Circle Reader Service Card No. 164



A new word, which means more than automation, for it is the custom-fitted application of today's finest automation equipment to your particular needs...

This announcement is a culmination of Friden's years in integrated data processing. Friden's assumption of responsibility for the most important phase of automation—its practical application.

The first step to PractiMation is a critical analysis of your office. Second, an outline of objectives for increasing its efficiency (without personnel changes). Then, consult your Friden man. He is an expert, and has solved a good many problems like yours. His help can be invaluable

Next, you need equipment that can be used by your present employees without special training; equipment which is sanely priced, easy to install. And, above all, equipment which is expansible with your business.

Here are some good examples:

A. Friden SBT Calculator—the famous "Thinking Machine of American Business." Touch-one-key simplicity. Performs more steps in figure-work without operator decisions than any other calculating machine ever developed.

B. Friden COMPUTYPER® (Model CTS)—produces a complete invoice in one operation with virtually no operator intervention. Reads alpha-numeric data from tape, edge-punched cards, or tab cards; accepts variable data through typewriter keyboard. Machine also punches selected data in tape or cards for statistical reports. The Computyper and any good typist make up an entire billing department.

C. Friden ADD-PUNCH® (Model APT)—A Data Processing machine, the APT produces a printed tape, and a punched tape for subsequent processing.

These are just three. Friden's full line of adding machines, calculators, accounting machines, mail room equipment, and "Tape Talk" IDP equipment can fully automate your office. Call your Friden man today, or write directly to Friden, Inc.

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Friden Creates A New World for Business ®

Friden *has the system*

FRIDEN, INC., SAN LEANDRO, CALIFORNIA • SALES, INSTRUCTION AND SERVICE THROUGHOUT U.S. AND WORLD.

For More Information Circle Reader Service Card No. 165

Letters

Continued from page 18

quirements as well as the traditional organizational structure.

O. T. Gatto
K. H. Meyer
Data Processing Group
The Rand Corporation

Dear Sir:

I am a recipient of your publication, MBA, and find it to be of much interest, especially the MBA Showcase. I do have one definite complaint to make—perhaps a constructive criticism would be a better term.

I am supervisor of systems at my company and as all people in this line of work, have a very busy schedule. I have, on several occasions, submitted your Reader Service Card for more information. The card states, and I quote: "Use this Reader Service Card to obtain detailed product information **without obligation.** Simply . . ."

My criticism stems from the fact that I can generally count on a salesman's personal call as a result of simply asking for more information. This to me is an obligation in that I must spend time out of a busy schedule talking to these salesmen.

I strongly feel that when I send in a card, the only reply I should receive is through the mail. After studying the brochures, etc., if I see an application or desire more information, I can call in the salesman myself. I cannot believe you desire your publication to be a means of providing calling lists for salesmen. I will no longer submit Reader Service Cards under these circumstances.

C. J. Haag
Systems Supervisor
The Timken Roller Bearing Co.

Ed. Note—We, of course, have no control over a manufacturer's sales approach—but Mr. Haag has. We suggest he simply be "not at home" to those salesmen he feels are intruding on his time schedule.

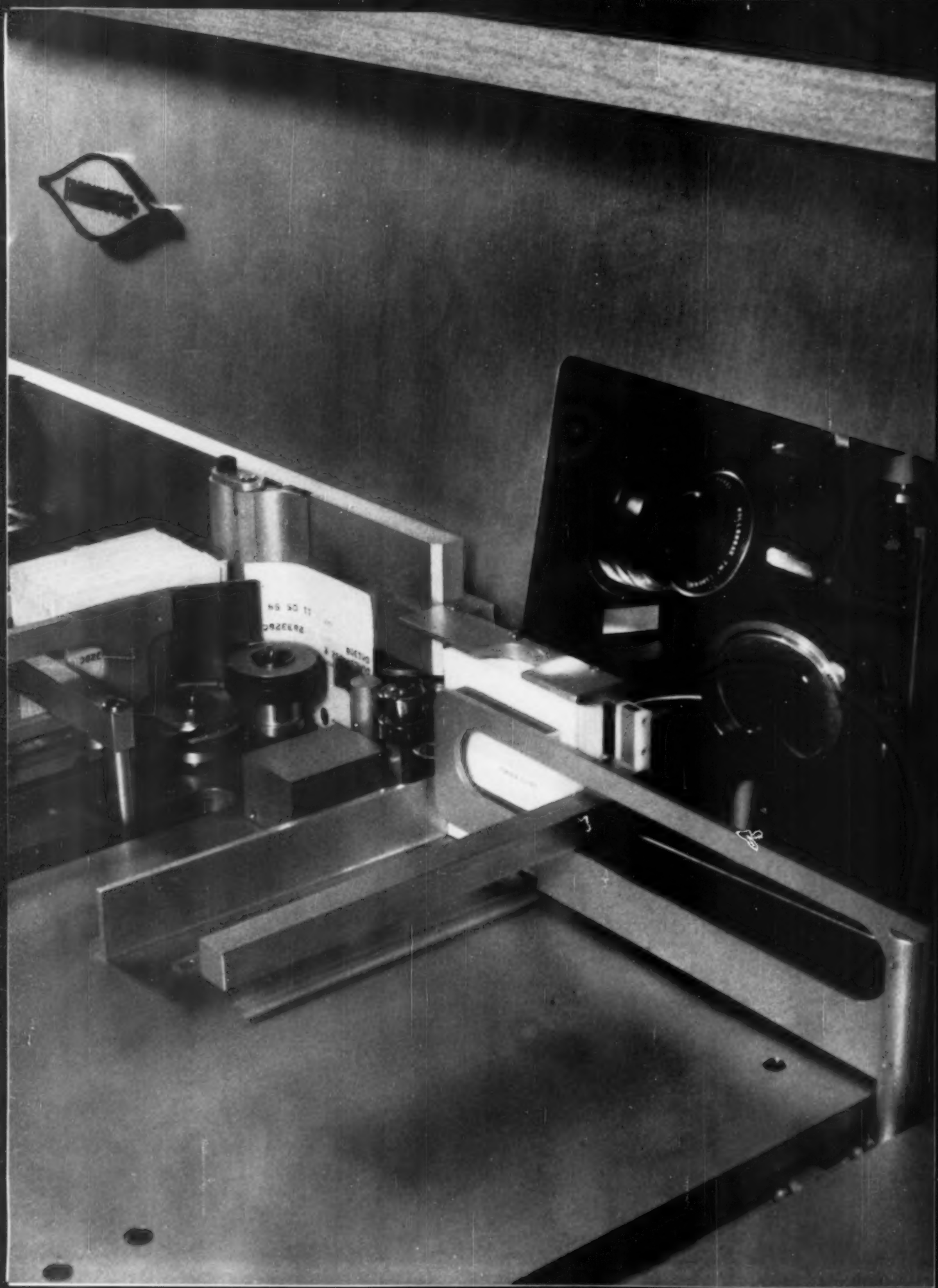
Address letters to the Editor, MANAGEMENT and BUSINESS AUTOMATION, 600 W. Jackson, Chicago 6, Ill.

A branch plant, office or warehouse. Or maybe several of each, all generating inventory reports, sales statistics, engineering data that ought to be flowing into your data processing center right now so key facts and figures can go **on time** to the people who must act on them. The trouble is, your data processing center is here, and your branches are out there. ¶ There's a way around it, of course. Collins Data Communications. A Collins Kinetape magnetic tape or Kinecard punched card transmission system can dramatically extend the use of your data processing center, linking it to all branch or regional locations via existing telephone or other common carrier communications lines. ¶ The cost of installing a Collins Kineplex® Data Communications system can be far less than the cost of duplicating and staffing computers. And with Kinetape or Kinecard, which transmit data twice as fast as any other current commercial equipment, you'll be taking a giant step toward maximum use of your existing data processing system. ¶ We'd be happy to tell you more about building or improving data networks with Collins Data Communications systems.
Please write to **Collins Radio Company,** Western Division, 2702 W. Olive Avenue, Burbank, California.

COLLINS

Collins Radio Company, Burbank, California/Cedar Rapids, Iowa/Dallas, Texas

What's going on out there?



Machines that "read" are bringing a new look to data processing systems plus an economical and efficient solution to the input bottleneck

OPTICAL SCANNING— AN UNLIMITED HORIZON

By Arnold E. Keller

OPTICAL SCANNING is well on its way toward routing the plague of business automation—input bottleneck. In some areas it has already delivered the knockout blow. For example, nine of the nation's major gasoline and oil companies have some 16 scanning machines in action daily, processing over three quarters of a million credit card invoices. The scanners read the account numbers on the customer invoices and convert the invoices into punched cards for further automatic processing.

Development of optical character recognition equipment, the technical name for optical scanning machines, could well be the most important news in business automation since the advent of the punched card, for it makes the "turn around" document a data processing reality. Turn around, or "recirculating" documents, are those prepared by a data processing system, sent to the customer and then returned to provide automatic re-entry to the data processing system. The term also describes source documents, such as retail sales checks and credit card purchase receipts, which are imprinted at remote locations and forwarded to a regional or central processing center.

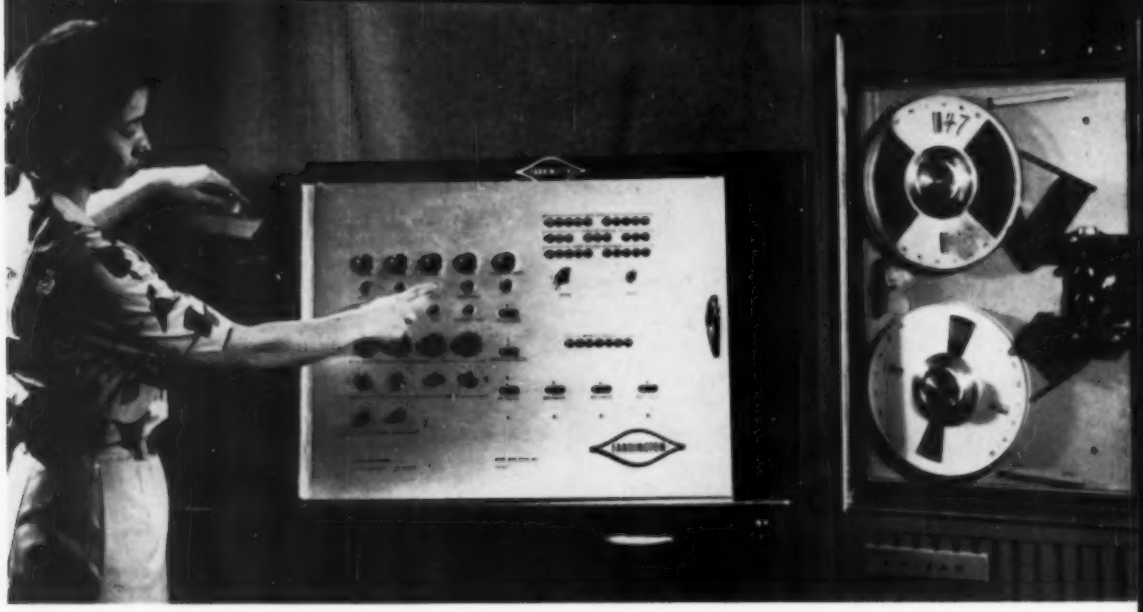
With the printed output of an ADP system providing automatic re-entry to the system, the troublesome imput bottleneck is eliminated and the business automation "loop" is closed.

Optical scanning equipment has the ability to read virtually any printed document and translate what it has read into machine language—punched cards, punched paper tape or magnetic tape.

Among the economical and operational benefits it offers are: 1) Reduction in transcription costs by the substitution of an optical reading device for manual transcription; 2) Increased speed and accuracy by use of an optical sensing mechanism connected directly to the data processing system—permitting processing of the original document instead of a punched card, paper or magnetic tape; 3) Automatic handling of original documents when sorting or merging of the documents is required.

Commercially, optical scanning is the "real world" of but one manufacturer—Farrington Electronics — who acquired the "EYE" reading machines through a merger with Intelligent Machines Research Corp. in March of 1959. David H. Shepard, founder and president of Intelligent Machines, and the inventor of the machines, is vice president of research and development for

"Turn around" data processing in action. Utility bill stubs at Arizona Public Service Co. flash past the reading "eye" of a scanner at 150 per minute and are read into punched paper tape for further processing.



One of three Farrington scanners installed at the First National City Bank in New York City to read the serial numbers on traveler's checks. The output of this machine was recently converted from punched cards to magnetic tape, making it the first of its kind to read information and translate what it has read into business language on magnetic tape.

Farrington. Mr. Shepard also served as a consultant to IBM during the company's early efforts in MICR.

IBM, GE, RCA and NCR are among those expected to announce their entry into the optical scanning field at any moment. The National Data Processing Co., Dallas, has announced plans to install "the first optical scanning system to handle retail accounts receivable." Called the NDP Readatron, the system is expected to be installed in a large southern department store later this year.

Addressograph-Multigraph has perfected its optical code scanner which operates on a "bar-code" principal; the scanner reads the codes which are printed above the characters rather than reading the actual character. The company has introduced the system in the oil industry and is planning a concentrated attack on department store accounting functions where the Addressograph plastic credit card would be the key to the system input.

Payday twice a year

But while others are developing or announcing, Farrington has a long list of successful applications and satisfied customers with some 29 scanners in operation with 15 firms. Included on the list are: First National City Bank, New York (processing travelers' checks); National Biscuit Co., New York (converting sales reports to cards); Reader's Digest, Pleasantville, N. Y. (book club record processing); American Telephone and Telegraph Co. (dividend checks and stockholder records); Ohio Bell Telephone, Cleveland; Arizona Public Service Co., Phoenix; and Atlantic City Electric Co., N. J. (cash accounting).

Readers Digest rates as the pioneer user of optical scanning equipment, having employed a character reader since September, 1955, to process shipments of 15 to 20 million books annually. (In September, 1959, the scanner read its billionth character.) The equipment has enabled the Digest to reduce order processing time from one month to slightly over one day. The scanner is said to pay for itself twice each year.

In one pass, the scanning unit reads the two to four-line name and address, which is typed on a 90-column Scriptomatic "Order Entry" card, and converts the alphabetic information into a numeric code, punching the coded data into the card being read. The scanner reads the subscriber's name from the first line, character by character, and selects the first and last initial, whether or not any title, such as Mr., Dr. or Mrs., appears in front of the name. From the last line the scanner extracts the abbreviation for the state involved and translates the abbreviation into the standard numeric state codes assigned by the Postal Department. The street number is extracted from the second line in the case of a three or four line address, with a string of zeros being entered automatically for two line addresses which have no street address.

The scanning unit, linked to a Remington Rand summary punch, punches into each card a two

digit state code, five digit city code, two digit last initial code, two digit first initial code, four digit street number code and a five digit serial number code which is generated automatically. Punching speed is 150 cards per minute.

The Ohio Bell Telephone Co. provides an excellent example of how scanning equipment has made possible the use of a turn around document. The familiar paper telephone bill is prepared on an IBM 407 printer and forwarded to the subscriber. When the stubs are returned with payment they are processed through the scanning unit which reads the account number and dollar amount of the bills. Two lines are scanned to obtain the information.

Noise at First National

If the bill is not paid as rendered, a clerk draws a line through the amount causing the stub to be selected for manual processing. The scanning units are connected to an IBM summary punch which punches a card for each stub read. Reading and punching is at the rate of 100 per minute and processing of about 29,000 stubs daily is possible.

Optical scanning enables Ohio Bell to process cash receipts within two to three hours after receipt, an advantage highly desired by utility companies as well as by any firm handling accounts receivable. To accomplish the same results with manual keypunching would require a large force of operators with an obvious decline in accuracy.

One of the most difficult scanning jobs has come through with flying colors at the First National City Bank of New York. There, three scanners read the serial numbers of redeemed travelers' checks and punch a card for each check on an IBM summary punch. The cards then become input for the bank's data processing system.

The reading is accomplished under trying conditions because of poor media quality. The paper checks are often in poor condition due to repeated handling and the intricate engraving of the checks provide considerable background "noise." (In character scanning operations, any printing, lines or marks that appear in or around the area to be scanned, that may cause a scanning signal in competition to the correct character scanning signal, is categorized as noise, or interference.)

Overstamping from depositors and transfer banks is also a noise factor. To counteract the interference the scanners are equipped with a special "gloss-sensing channel" which utilizes the glossy characteristics of the serial number digits.

Despite the media difficulties, and despite the fact that the digits scanned are simply ordinary Arabic in a Gothic font without any check digit

Continued on page 26

Scanning in the Oil Industry

The following study is extracted from a consulting firm's report on the use of 15 Farrington Optical Scanners covering Oil Company installations on an industry wide basis as of November 1959.

"It appears that the break-even point for this machine is where four to six key punch operators would be involved on an application where the data to be punched could be in printed form acceptable to the machine, and where the customer has complete or substantial control over the source documents. The use of check digit and optical scanning typeface should produce very reliable reading results.

"On an overall basis, it appears that the oil companies are making a substantial saving in the use of this equipment. The following schedule shows an estimate of the incremental savings:

"Estimated Key Punch Costs:		
Total documents to be punched per day	700,000	
Number of digits	10	
Total digits	7,000,000	
Average strokes per hour	7,000	
Average number of operator hours	1,000	
Average working hours	7	
Number of operators required daily	133	
Est. annual wage	$ 5,000	
Total estimated key punch costs		**$665,000**
"Estimated Farrington Optical Scanner Costs:		
Number of scanners presently used	15	
Actual annual unit cost of scanner (including 10% Federal excise tax)	$ 21,000	
Cost of equipment	$315,000	
Operators (one for two scanners) at $6,000	$ 48,000	
Total estimated scanner costs		**$363,000**
"Estimated annual savings		**$302,000**

"Note: Space savings resulting from installations of the scanners (which could be considerable) were not included in this estimate."

Ed. Note—What the bulletin did not mention was that approximately 25 of the 133 operators required daily would be retained to process unreadable and mutilated documents. The estimated annual savings would, therefore be reduced to $177,000. Taking the 25 keypunch operators into consideration, the estimated annual savings per scanning machine would be about $12,000.

A Prediction . . .

By Herman L. Philipson, Jr.
President, National Data Processing Corp.

The first of the new machines that will eliminate punched cards are already being introduced into the banking industry for the mechanization of check handling processes. Versions of these same machines designed for other paper handling functions are also available and in action, and it is likely that the replacement of punched card equipment will take place much more rapidly than is usually the case in technical revolutions of this type.

Rapid changes can be expected because much punched card equipment is rented; therefore, the firms using it need not be concerned about amortizing their investments before acquiring superior equipment. Furthermore, the actual cash savings on a monthly basis from the use of this new equipment will make it a clear cut decision for business management to abandon use of punched cards.

The resultant savings in paper costs accruing to equipment users are likely to be so large that it is doubtful that business machine manufacturers with huge investments in punched card equipment will be able to retain their competitive positions even materially by reducing equipment rental changes. Accordingly, it appears that the use of punched card equipment in the United States will be relegated to very small business operations, that much of the present equipment in use will have to be transferred to export markets, and that card producing facilities will have to be used for other purposes.

During recent years, the punched card has become so familiar to the business community that its actual value is seldom questioned. It is merely accepted as something existing and essential. In asking the question, "Are punched cards really necessary?", it is appropriate to consider the reasons why they have come into wide use.

The obvious answer is that punched cards provide a means by which information recorded on pieces of paper can be conveniently sorted into any desired arrangement, and in such form that any portion of the information punched into the cards can be read into a device capable of performing desired mathematical computations. In addition, the use of punched cards permits either the information from the cards or computations from them to be printed out and, if desired, punched automatically into other cards for subsequent processing.

A number of costly inefficiencies are inherent in the use of punched cards. In many applications, the cards contain information duplicating that which is found in "live" documents more suitable for the initial required usage. The additional cost of using punched cards involves not only the price of both the "live" document paper and the more expensive card paper, but also the cost of punching the information into the cards. In some applications, this punching is accomplished automatically as a by-product of the production of the "live" form. More often, duplicating the necessary information into the punched card is a costly manual operation. Frequently, an additional process is necessary in order to verify that the manual punching operation has been performed correctly.

Now the technological barrier has been broken. Machines are in being that can "read" and process information imprinted on documents of original entry and sort these documents into any desired arrangement. Investment in these machines is more than justified by the elimination of the costly inefficiencies inherent in the use of punched cards. Availability of these machines will enable the automation of business operations to move forward at an even more rapid pace than heretofore and the obsolescence of the punched card is at hand.

feature, the gross reject rate is under five percent.

The units convert checks to cards at the rate of 100 per minute. They have replaced manual keypunching which presented a constant production problem due to sharp seasonal peaks when check volume would rise to 145,000 a day. The bank is installing a Univac and the scanning units will then feed directly to magnetic tape, greatly increasing the present processing speeds.

Another example of the versatility of optical scanning is provided by the exciting application of the National Biscuit Co., New York. Some 3,000 lists are received daily from Nabisco field locations around the country showing total dollar sales, credits and adjustments for each salesman and customer. These lists, prepared on NCR and Burroughs adding machines, contain up to 27 lines each of information including salesman number, account number and total sales.

The lists are fed through the scanning machine which can read 10 lines per second and provides output of up to 100 cards per minute on an IBM punch. Information such as local office number and date which appears on the lead line of the list is stored and punched into each card along with the sales information. A total card is also punched with the sales amount for control purposes. The cards become input for a 650 computer system.

Scanning for stock

The operation provides sales statistics for computation of salesmen commissions, dollar sales and other vital data within two to four days of the actual product sale in the field. Such information would be virtually impossible to get in that time period, and with the needed accuracy, under a manual system. Future applications will include addition of specific product codes to the lists which will provide daily sales by product for tighter production planning and inventory control.

Scanners play an important, if not indispensable role in the automated stock-bond record operation of American Telephone and Telegraph Co. (See MBA, May, 1959.) Four units read dividend checks, stock warrants and proxy notices printed out on IBM high-speed 720 printers linked to a 705 computer system. The data is heat-transferred to tab-card checks on an Addressograph-Multigraph unit. The scanned line on dividend checks contains the account number and a check digit, an area code for mailing purposes, dollar amount, and a check digit for area code and dollar amount combined. The unit punches this data back into the same check before mailing and simultaneously accumulates the amounts read, punching the batch total into a trailer card for control purposes.

On return of the checks from the various depository banks the unit scans another line for any

Statistics and Flow Chart of Nabisco's Daily Scanning Operation

Accompanying statistics for the flow chart on the right were prepared by Nabisco personnel and represent daily work load averages for the month of January, 1960. In a step-by-step breakdown:

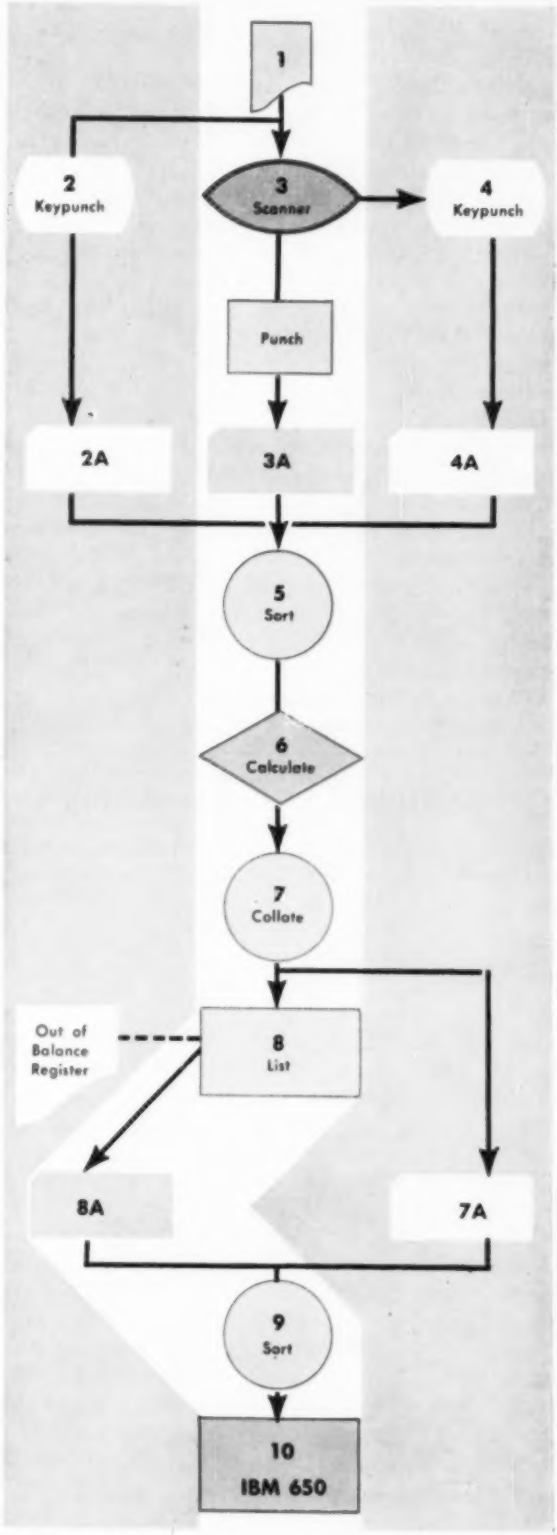
(1) Transaction lists for sales, credits, adjustments and other miscellaneous items are prepared on Burroughs and N.C.R. adding macines and received daily by U. S. Mail from field locations; 3,270 lists, 58,860 lines (including lead and total lines), averaging 18 per list and 470,880 characters—8 per line.

(2) Lists of sub-par print quality, usually due to malfunctioning adding machines, failure to change ribbon and occasionally damage enroute, are segregated prior to scanning and keypunched; daily averages are 270 lists—8.3% of total, 4,860 lines. (2A) Punched cards average 1,400 daily requiring 400 minutes, or 3.5 cards per minute—5.2 cards per list, 3.5 records per card.

(3) Processing lists through the scanner; daily average, 3,000 lists—8.2 per minute, 54,000 lines—148 per minute, 432,000 characters—1,183 per minute. (3A) Output on IBM 523 punch, including operator handling processing time; 15,600 cards—365 minutes, 42.7 cards per minute, 5.2 cards per list.

(4) Keypunch rejected lines from scanner; daily averages, 2,800 line rejects—5.2% of lines processed. (4A) Daily averages of cards made from scanner rejects—2,000 cards—500 minutes.

(5) After cards are made from the above three sources they are sorted to combine and group cards for proof; daily averages are 19,000 cards processed by control groups. (6) Cards are crossfooted to prove page and branch totals. (7) Groups which are in balance are separated from those which are out of balance. (7A) Daily averages of "in balance" cards, representing 2,842 lists or 87% of the 3,270 lists received, reach 16,530. (8) "Out of balance" cards are listed and create an out of balance register. Daily averages are 428 lists in error—432 lines or 8/10 of 1% of lines processed thru the scanner contain a read error. Control clerks reconcile errors. (8A) Daily averages of cards in out of balance group are 2,470. (9) All cards are again sorted. (10) Cards are ready for processing through an IBM 650 tape system.



change of address indicated, rejecting those with any change. At the same time it reads the holes previously punched for amount, accumulates the amounts and punches batch total trailer cards for bank reconciliation purposes. Daily output on a seven hour shift exceeds 50,000 cards a day for each unit.

The volume of production is a key factor. Over 600,000 dividend checks must be processed by A. T. & T. four times a year. In addition there are the proxy notices, stock options, warrants and other transactions to be handled. All of the operations must be accomplished within a very limited time. Without the scanning equipment high-speed conversion of printed data into machine language

would require a huge compliment of conventional equipment along with a considerably larger personnel force. Even then, the volume would be processed at much slower speeds than is now possible.

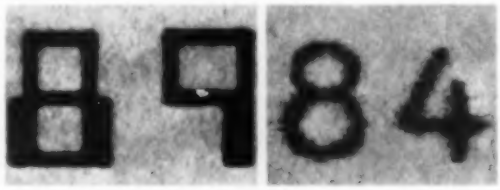
Among the oil companies using scanning units to process their credit card accounts receivable are: Standard Oil of California and Standard Oil (Indiana), Mobil Oil and its General Petroleum and Magnolia Petroleum Divisions, Phillips Petroleum, American Oil, and Tidewater.

The scanning units accept a 51-column tabulating card invoice created at the station by inserting the customer's plastic credit card into a hand imprinter. The 10-digit account number is scanned and punched into the card as it is read. (Newer units will also read and punch the amount of sale which is placed on the card at the time of imprint.) The scanner can also compute and punch a missing or mutilated digit of the account number. If more than one digit is missing or mutilated the scanner passes the card unpunched. The cards are punched at the rate of 180 per minute.

The units replace manual keypunching operations, providing greater speed and accuracy. One unit does the work of five or more keypunchers. (See chart, page 27.)

The key to effective operation of a character sensing system, whether it be magnetic or optical, is the system's ability to cope with quality variations in the printing. In the development of MICR for the banking industry (See MBA March 1959, page 14) the American Bankers Association issued a list of rather rigid printing specifications —which included the mandatory use of the E13B type font—to guarantee that a high quality of printing would be present.

Recognizing that printing for MICR systems is and must be done under highly controlled conditions, it becomes evident that the same degree of print quality could hardly be obtained from documents prepared on high speed accounting machines, cash registers, adding machines, typewriters, hand imprinters and other source record-



ers. (Note difference between an E13B character and a character printed on an IBM 407 machine, above.)

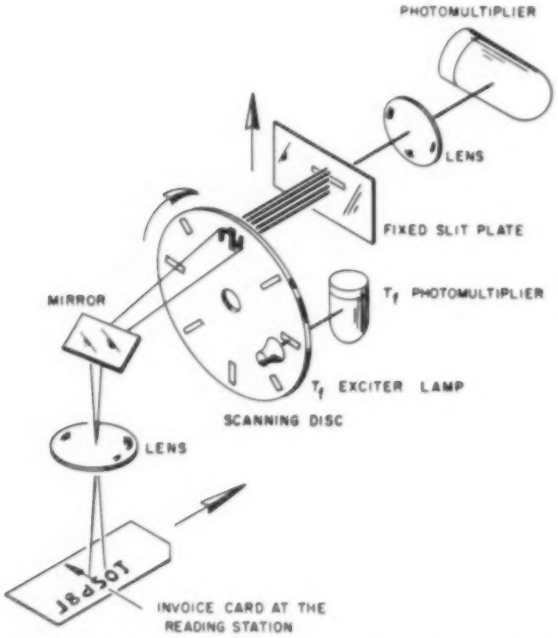
The critical tolerances involved in the ink formula for MICR printing, the lack of inexpensive imprinters and inscribers, the present inability to create turn around documents on high speed equipment and the lack of an alphabetic type font, are other stumbling blocks which prohibit the wide spread use of magnetic ink character recognition systems for general business use.

A retail crisis

The need for high print quality to assure top performance in optical scanning had to be tempered with the realization that economics seldom permit existing printing equipment to be replaced with specialized machines to achieve the necessary quality. The next step was to design an "optimum" typeface which would require only a modest print quality to reproduce its distinguishing features. Such a typeface could then replace print wheels and type bars on existing equipment, providing an economical switch to type suitable for scanning.

Here again, Farrington has played a leading role with the development of Selfchek, a type style which gives the characters a selfchecking property so that each character can be tested for validity. In reality, Selfchek is a bar code arranged to form plain language characters. The typeface, though not essential for scanning, is widely available on typewriters, adding machines, cash registers, billing machines, embossers and many high-speed printers. For example, in the Ohio Bell Telephone application the IBM 407 ma-

The Mechanics of Scanning



The scanner makes a rapid vertical scan. Due to document motion (or in some cases the motion of a sweep mirror) the vertical scans progress across the character. Output of the scanner is a video signal.

chine print wheels are equipped with Selfchek type. In the National Biscuit Co. operation some 450 adding machines were converted to Selfchek type at an average cost of $32.00 per machine.

Other manufacturers have also developed special type faces for use with their optical systems (See chart at right.) Unfortunately the various type fonts will probably bring about an early crisis in the optical scanning industry, unless some effort is made to have all systems compatible to the various typefaces. The first problem of type compatability may well occur in the retailing industry.

Two giants on target

The National Retail Merchants Association has evidenced considerable interest in optical character recognition, and through Ethel Langtry, director of its Retail Research Institute, in August, 1959, formed an Optical Standards Committee headed by Henry F. Sherwood, of Touche, Ross, Bailey and Smart.

The committee was assigned the function of establishing standards for imprinting and optically reading sales checks, register tapes and other documents which are used in retail stores; in addition to investigating the state of the art in terms of retailing problems. In an interim report, released last February, Mr. Sherwood, commenting on the special type fonts employed by the various systems, said that, "There is serious reason to doubt that retailers in a given city would all agree to exclusively utilize a certain manufacturer's reading equipment."

He saw the situation as somewhat reminiscent of the days when there were several railroad gauges in the country and paraphrased the problem by stating that, "the industry does not care if we have a number of railroad companies so long as the cars are able to travel over the same tracks." In other words, said Sherwood, "If we can't agree on a common type font, then the alternative may be to look for equipment which is able to read various type fonts."

Two companies, General Electric and National Cash Register, who have apparently trained their optical sights on the retailing industry as a prime target, do not appear to be concerned about the compatibility problems.

General Electric has submitted the 69-A font as a candidate for the RRI common language numerals. G. M. Miller, manager of G. E.'s Advanced Peripheral Equipment Department says the font is designed as an optimum numeral font which will tolerate a large amount of printing deterioration and still be readable by humans and machines.

N.C.R.'s basic objective in its optical reading program dictated that their scanner must read figures printed by their conventional cash registers, accounting and adding machines. Their approach: Determine the print quality that can be reasonably achieved and then design and build a reader capable of reading this print.

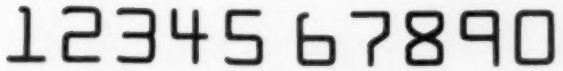
A recognition system has now been developed by N.C.R. based on optically reading a simple machine recognizable code. This code "within the characters is uniquely different for each character, making possible complete self-checking, yet appearing to the human eye as a highly stylized conventional printed character.

R.C.A.'s Data Processing Division has developed a "5 by 7" font which will be used in conjunction with the company's two high-speed scanning systems. The characters are very similar to ordinary gothic type.

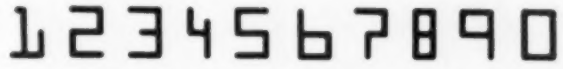
The technical approach to optical character sensing equipment varies with the manufacturer.

Continued on page 58

Typical Scanning Type Faces



Farrington Selfchek: Already available on various types of business machine, Selfchek characters differ from each other by at least two strokes. Thus poor quality cannot cause an error unless two parts of the character are changed.



General Electric 69-A: All characters are composed of only horizontal and vertical lines constructed on a 6 by 9 zone grid. The right edges of all characters have a minimum height of five zones to facilitate character presence detection.

National Cash Register Co.: Each character has a code "within the character" combining two languages in one. The code, uniquely different for each character, makes complete self checking possible and is said to have a remarkable tolerance for relatively poor printing.

Radio Corporation of America: The R.C.A. 5 by 7 font is based on a 5 by 7 position matrix technique. The font has five points for recognition. The two dots contained in the zero distinguish a zero from the letter "o," as the font comprises both numeric and alphabetic characters.

A 'Decade of Development' . . .

The Government Evaluates Its Data Processing Progress

By John A. Beckett

DURING the past 10 years—the "Decade of Development" for automatic data processing—Federal Government pioneers in the vanguard of ADP utilization have seen some important bubbles burst. They have faltered at times, and they have fallen into traps because they didn't know the traps were there. But, they kept pushing ahead in the sure knowledge that this was the price of progress.

The vanguard has now reached a logical point at which to take careful inventory of the past and a fresh, new look at the future. In 1950 there were few people who knew the potential capabilities of the half-dozen or so computers then in existence, and even they didn't have a clear picture. By 1955, this situation had changed a little, but not enough to be meaningful to more than the select few.

In 1960, thanks to the pioneering efforts of several departments, there is enough practical experience and sufficient hindsight to make it possible to begin to assess the past in terms of more realistic planning for the future.

Of the approximately 700 computers in use today for business management, science and engineering in the government, no more than 15 or 20 percent have been in operation long enough to provide the basis for a complete assessment of success in exploiting their full potential. But even with this small percentage, it has been possible to formulate some useful guidelines and to identify numerous aspects of ADP utilization where guidance is lacking.

For the past several years in the Bureau of the Budget, and for longer periods in a few of the departments, programs for insuring more practicable utilization of ADP equipment have been in the process of formulation. In terms of a Government-wide effort in this direction, special projects and studies have been completed, are now underway or are planned for the future.

The Interagency Committee on Automatic Data Processing is a major force in identifying and recommending courses of action for dealing with ADP problems of mutual concern. This committee helps to formulate the guidelines which members can then apply to similar problems within their own establishments.

Many of the people serving on this committee are numbered in the ranks of the ADP "pioneers," and some of them might be called "elder statesmen" in the field. Their efforts and their errors—which are now known and can be avoided—contribute much to the stature of the group.

Progress has been dramatic. The Interagency Committee, established in 1957, is composed of members and alternates from the 12 largest departments. Representatives from many other departments also participated, and the entire group is chaired by the Bureau of the Budget.

About The Author

John A. Beckett is an Assistant Director of the Bureau of the Budget, a post he has held since March, 1959. He was formerly midwest regional director of the business consulting activities of Arthur Young & Co.

Mounting evidence proves that while financial management data is indispensable to a Federal executive, its value to him is in direct proportion to the extent to which this information has been integrated with other-than-financial data.

With the aid of the President's Management Improvement Fund, the Bureau sponsored a study of the Government-wide ADP responsibilities of the central agencies. The framework of this study now constitutes the framework for the entire Government ADP program.

In another major step, a consulting firm was employed to study and report on the personnel problems involved in the use of automatic data processing equipment. The findings of this study have been used in dealing with the impact of ADP on personnel administration in the agencies and Government-wide.

Comprehension at the top

The committee has also appointed task forces to study and report on the problems it faces. To date, the Bureau of the Budget has received reports on rental versus purchase of equipment, interagency sharing of equipment, determining the cost of ADP applications, a Government-wide information exchange, guidelines for studies to precede the acquisition of equipment, and a Government-wide program for ADP orientation and training.

With the help of the task force report on determining costs of applications, the Bureau asked all Government agencies for an inventory of ADP equipment along with an indication of the uses being made of the equipment and the cost of its operation both in dollars and in people. This information has been summarized and will soon be distributed throughout the Government.

A report on "Guidelines for Studies to Precede the Acquisition of ADP Equipment" has also been prepared and transmitted to all departments and agencies with suggestion that it be used as a guide when studies of various types are being planned or conducted.

The Bureau of the Budget and the General Accounting Office also took a task force report on rental versus purchase of ADP equipment and are using it in a project for the development of a policy regarding the advantages of renting or purchasing. It is too early and too risky to forecast the outcome of this study, but there is a mounting body of evidence to indicate that the practice of renting as a standard policy—which prevails in some quarters—may need to be modified in some degree.

With the aid of the task force report on ADP orientation and training, a Government-wide program is to be formulated that will take into account the training work already accomplished by many departments, the interagency training courses and the management intern program of the Civil Service Commission. The goal is to incorporate the additional training and orientation needs which have now been recognized. Additional training should be given to many top-level officials who require a better comprehension of the capabilities and limitations of computers and the impact that computers have upon the organization and operation of their agencies, the people employed and their budgets.

Form and shape of things

This program will also include recognition of the fact that a fair proportion of the people who perform the systems analysis aspects of computer utilization are in need of additional training.

The study revealed that in most cases the training of computer programmers and operators, as two examples, is well in hand and there is no immediate need for a concentration of efforts in this direction.

The Bureau is also in the process of determining whether or not it will be necessary to establish one or more computer service centers in the Government. If it appears that sufficient requirements exist to keep such a center (or centers) busy,

then as a further objective of this project, the Bureau will take steps to set up an experimental center. In this job, the Bureau will call on the other agencies for assistance in planning and staffing. As a part of this second phase, such factors as service charges, economic feasibility and competition with private business will be considered.

The ADP Interagency Committee, itself, will come in for some reorganization due to the recent successes of its first projects. The idea is to continue to improve the committee's effectiveness as a medium for the interchange of ideas and information. It will be a forum for mutual problems, a proponent of new or revised guidelines for operations, and it will act as an advisory body to the Bureau of the Budget and other agencies and departments on the form and shape of things to come in the ADP program of the Government.

Bigger fish to fry

The idea of sharing equipment within and between departments has been gaining momentum in some of the agencies where top leadership has recognized the operating and economic advantages of this practice. Equipment sharing, however, has its problems as well as its benefits. A task force report pointed this out. The conclusion is that a determined leadership will bring about desirable equipment sharing in any agency—not sharing solely for the sake of sharing.

The data obtained on interagency sharing, together with data the Bureau expects to obtain from year to year, will serve to aid in fostering and promoting a practicable degree of sharing equipment in the future.

Another program now underway is the integrating of data for the use of supervisors and executives. This has always been a challenge, especially to those engaged in data processing and interested in financial management data. There were once some valid excuses for not integrating data of several types, but in today's environment none of those excuses are legitimate. There is hardware available today, and where that hardware and man's ingenuity and determination have teamed up, the right answer can be found.

The accomplishments to date in IDP in Government are not as significant as the breakthroughs that are impending. But, the progress is significant in the sense that there is a continual learning process taking place as the less complex problems are solved. For example, in a number of agencies, there are instances in which a pattern has been found for integrating several types and categories of administrative resources data. Information about manpower, money and material are processed in one system and, at times, with production data added, are interrelated in ways that are far more meaningful to management than they were before integration took place.

There are "bigger fish to fry," however, in fields which involve the creation of integrated data processing systems for very complex management problems.

Eventually the right answers

The Navy, for instance, must procure, maintain, overhaul, convert and assign aircraft to operating units in its air program. For about as long as the Navy has used aircraft it has had one organizational unit which decides what aircraft will be bought, how many and when. Another unit decides which aircraft to convert and when. Still another develops the plans by which aircraft are allocated to operating units. And, finally, other organizational units make arrangements and decisions governing maintenance, overhaul, operating support, manpower and money.

To a very large extent, each of these organizational units generates for itself the data it uses to manage its aspect of the air program, and the most elaborate coordinating machinery must be used to achieve acceptable consistency among the various units in plans and operations. The Navy recognizes that despite the vastness and complexity of these interrelated activities, significant improvements would seem to be in store if, for purposes of data processing, the entire air program could be considered as a whole. In terms of data integration, there would be few problems as complex or more challenging, but the Navy will eventually find the right answers. It will take time, a great deal of ingenuity and probably considerable reorganization. Computer routines will have to be developed that are unlike any the experts have devised so far, but a logical and usable answer to integration of problems of this magnitude is on the horizon.

Promising subject

Another subject which holds great promise for the future is the interagency integration of systems. This can be explained with an example. The Veterans Administration processes claims of veterans and their dependents for benefit payments under the GI Bill of Rights. Approved claims are turned over to the Treasury Department for checks to be written, and these checks, stuffed in envelopes, are turned over to the Post Office Department for delivery.

By voluntarily working together on their separate systems, and by exploiting to the full the use of ADP equipment, these departments

Continued on page 48

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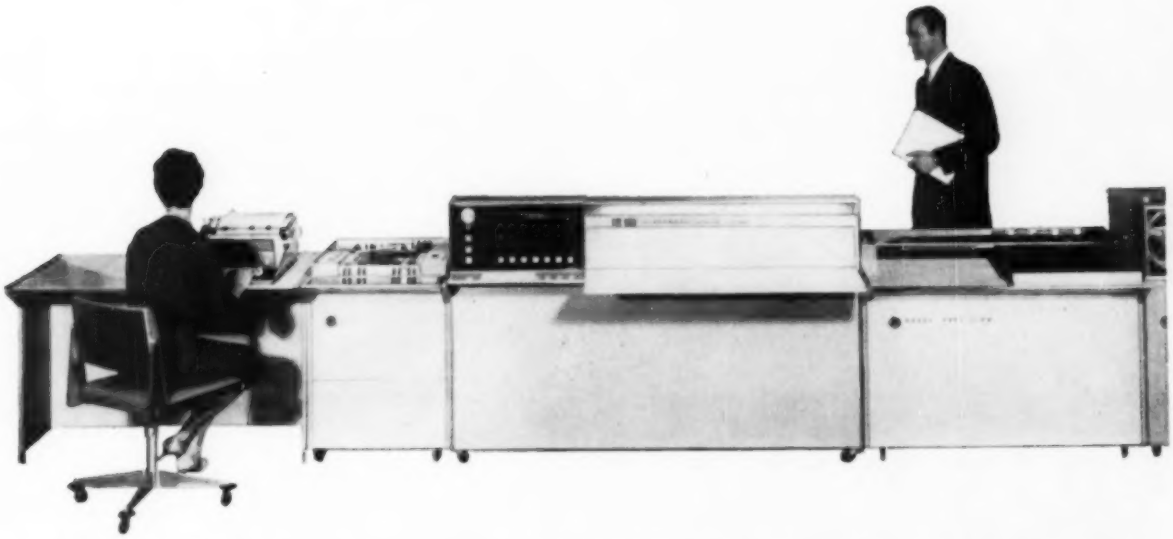

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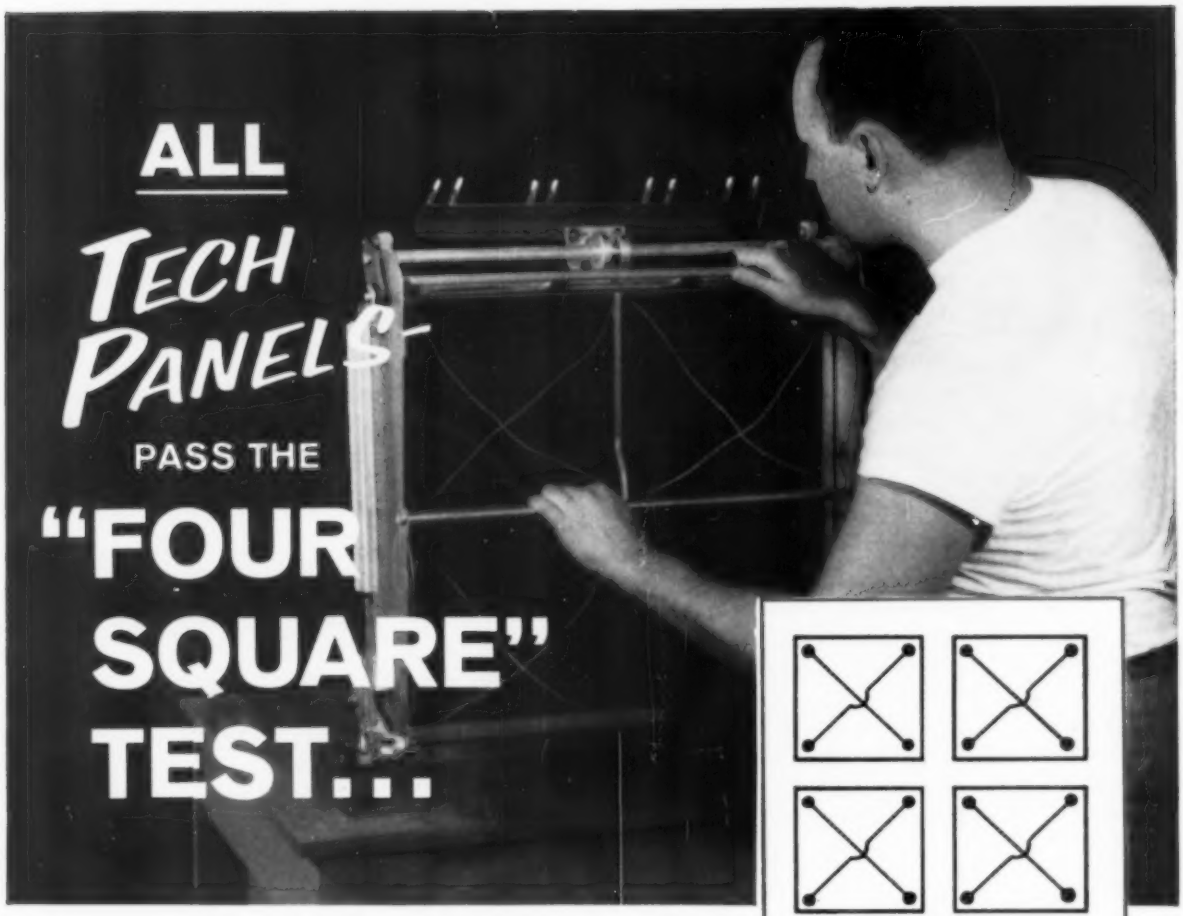

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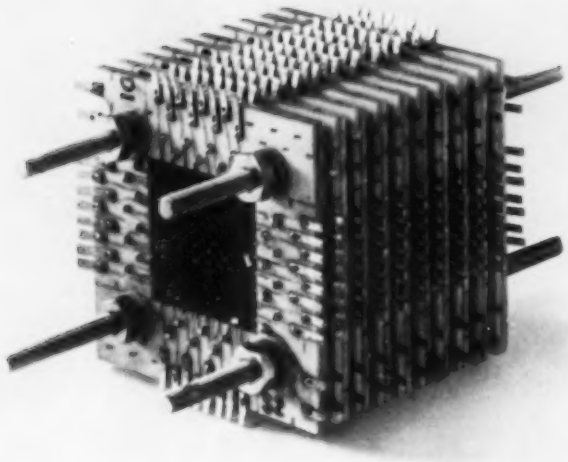


This is the Control Memory, an exclusive feature of the Honeywell 800 Transistorized Data Processing System. It is only 2¼ inches long, 2¼ inches wide and 2¼ inches deep, but its capabilities are heroic. Its design logic empowers Honeywell 800 to run off 8 major jobs simultaneously — each one starting and stopping independently. It supersedes the costly, complicated master programs or schedule of priorities required by conventional transistorized systems. To learn more about its accomplishment (Automatic Parallel Processing) and the many other design "firsts" of Honeywell 800, just write to Minneapolis-Honeywell, Datamatic Division, Wellesley Hills 81, Mass.

Honeywell

H Electronic Data Processing

S. E. Richardson and M. V. Furlow, Esso accountants, are shown collecting data from old records which remain on pallet, ready to be lifted back into storage position.

Records Get A Lift from Esso Standard

A NEW LOOK and a new lift in records storage has been achieved at the Baton Rouge Refinery of Esso Standard, a division of Humble Oil and Refinery. Using warehouse space and new techniques, the company has created a huge center to house the mountains of records it has been necessary to accumulate and retain over the years.

Using "palletized" records and a "mechanical" file clerk—a fork-lift truck that can lift a pallet of records from a 10-foot level—Esso has brought speedy access and positive control to its records retention program.

The records center was planned and designed by the refinery's Files and Records Storage Committee, the Accounting Division and the Stores Department. Most of the storage containers for the new center are lightweight corrugated cardboard, file-sized Tandem Storage Files supplied by Bankers Box Company.

Records were previously stored in various locations, usually in old buildings found unsuitable for productive purposes. Inadequate temperature controls and crowded conditions made working with the records a dirty, dismal and downright unpleasant task.

Now, with record housing centered in the refinery's clean, light and air conditioned main storehouse, the records retention program enjoys an environment equal to most any department in the company.

The accounting Division and the Packaging and Shipping Department are the only two groups in the refinery which are required to keep old records

Reaching for records stored at a 10-foot level is no problem with a fork-lift truck. Each of the pallets on the rack holds 48 Tandem trays. The records and containers weigh nearly a ton, but an employe can reach them almost as easily as reaching into an office filing cabinet.

in large enough volume to require a secondary storage location. In general, the records in this center are those which the company is required to keep for a number of years, either by law or good business practice.

Space has been allotted to the various departments in such a way that destruction of the oldest records is handled automatically as additional material is transferred into the center. Room for expansion has been provided for those records that must be kept permanently. An index shows exactly which records are stored on each of the 70 pallets so that employes unfamiliar with the center can quickly locate any record that they may seek.

The reducing committee

No special facilities were required to set up the center other than the pallets and the record containers. Standard size storehouse racks hold the palletized files and records. The record containers were chosen to make maximum use of available rack space.

Before setting up the center, the Files and Records Storage Committee reviewed the filing problems of each of the departments which generate large volumes of paperwork. By making retention periods as short as possible, eliminating duplicate files and encouraging the destruction of any material which has outlived its usefulness, the committee was able to reduce the volume of latent records from 7,000 to 4,000 cubic feet of space. More than 120,000 pounds of useless records and files were destroyed.

A lift from the truck

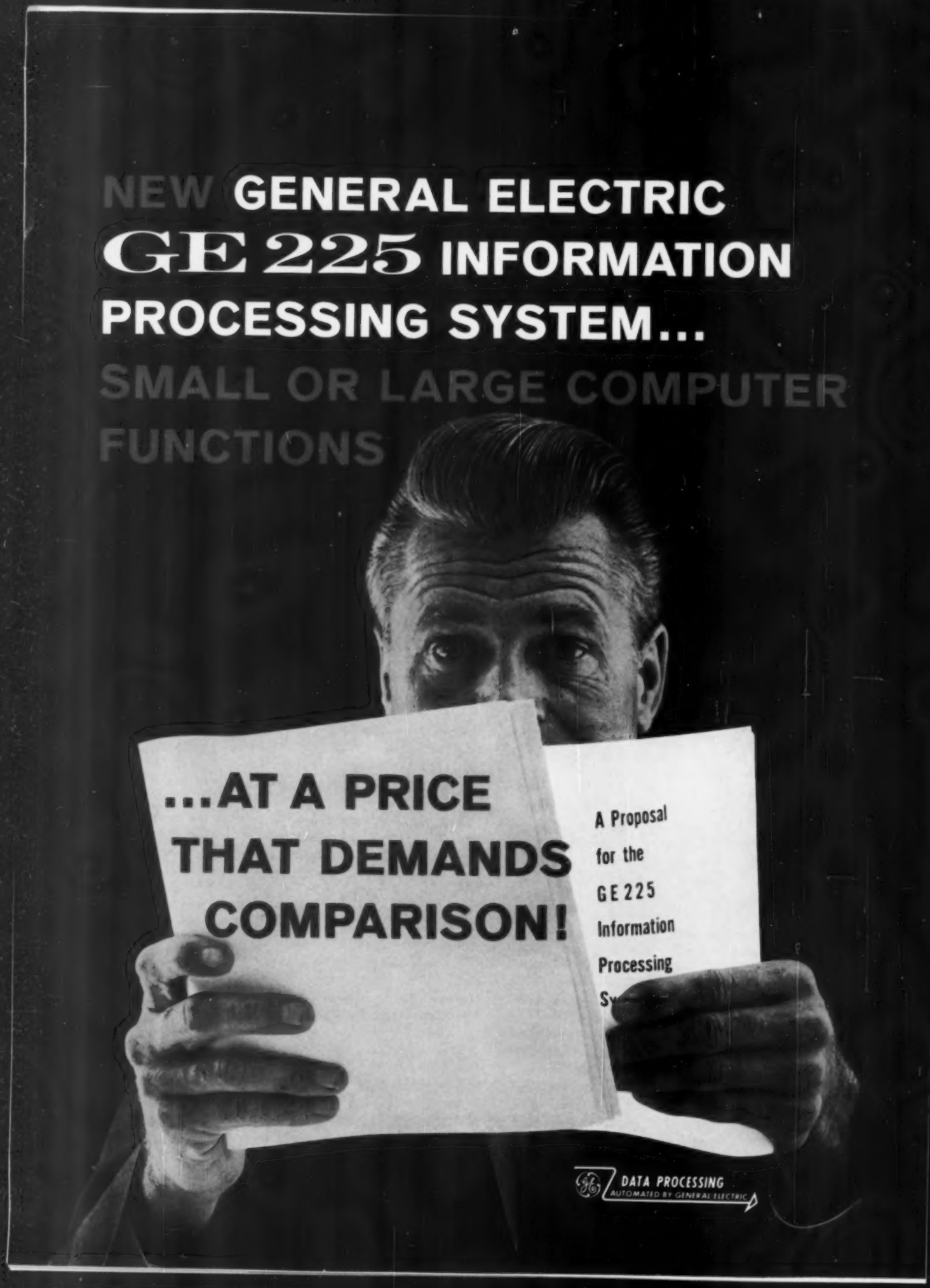
Tandem storage files house most of the records kept in the files. These files require no wood or steel shelving for stacking. The Tandem Unit consists of two filing trays and a stacking shell made of high-grade corrugated fibre-board. The shell is supported by a steel framework at four points in back and in front. The weight is carried on steel supports which interlock vertically and horizontally to form rigid banks of files.

Housekeeping chores are further facilitated by filing trays which are 15″ by 12″ to provide one size for either letter or legal size folders. Each pallet holds 48 of the Tandem trays. Each tray has large visual coding on the front to provide quick identification.

Some of the more obsolete records which the company is required to keep permanently by law, such as cash books and general ledgers dating back half a century, have been crated in wooden boxes. When an idle record or file is needed, a Stores Department employe, using a fork-lift truck, removes the proper pallet from the racks and places it in an aisle for ready accessibility.

A small office has also been set up in one of the rack sections as a convenience to employes who occasionally spend considerable time collecting information from the record files.

The entire system is geared to the modern records storage concept of good housekeeping in material handling systems. Through proper administration, the system has achieved neatness and precision in the filing and maintaining of inactive records and has realized savings in time and space for the company. ■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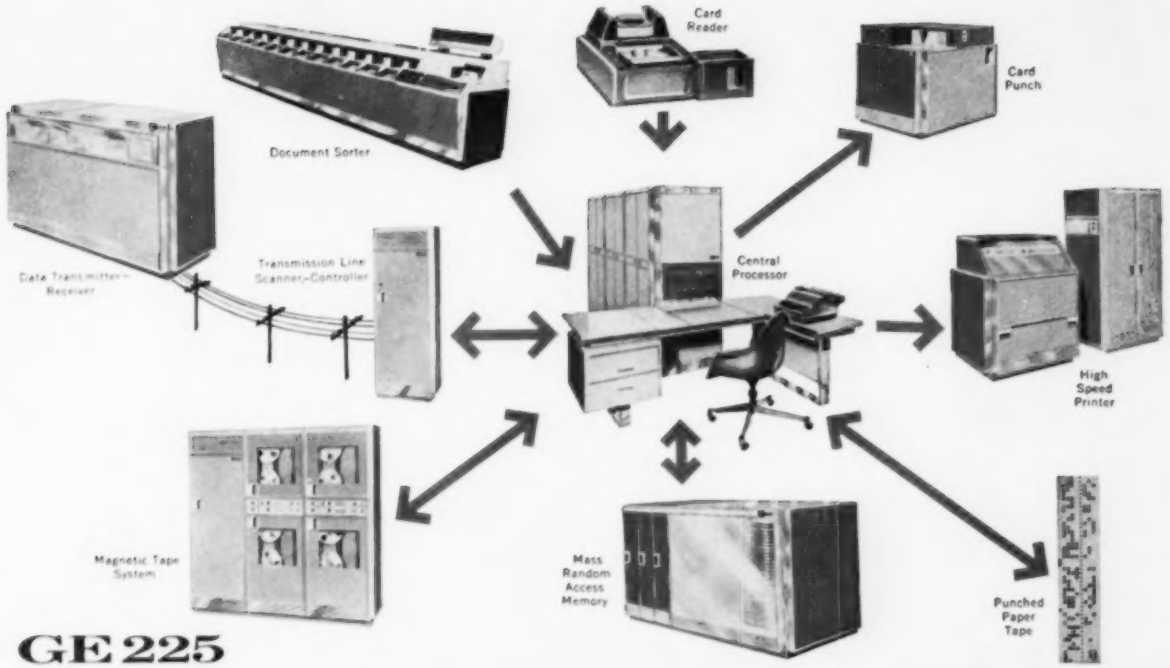

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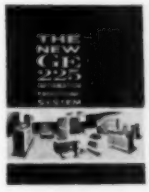

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The management men whose efforts brought the successful CFA program to Minnesota Mutual Life Insurance Co. Left to right, H. G. Bartholdi, second vice president and controller; H. F. Cherry, director of data processing; H. J. Cummings, president of MML, and C. R. Anderson, vice president and chairman of the original automation steering committee.

The Consolidated Functions Approach

ONE billing record, one daily operation and a minimum of manually prepared input were major data processing goals set by the Minnesota Mutual Life Insurance Co. when it embraced the early promises of business automation in 1954.

Dreams of integrated, fully-automated, push-button operations were brought to earth and reshaped in the light of six years of careful investigation, but the basic goal was finally crystalized into a working system termed Consolidated Functions Approach.

The CFA system has successfully been applied to a major group of the $2½ billion St. Paul company's operations. These include premium billing —the primary application—premium accounting, commission calculating and maintenance of loan status, as well as calculation and billing of loan interest, current year dividends, dividend account credits and paid-up insurance purchased by dividends.

All of these related applications are handled in one pass through the computer—a job which most insurance companies tackle in two or three steps.

The basis for the successful program was established in 1954 when a steering committee laid down philosophical ground rules which reflected the ideals then expected of automation. The first decision of the committee, which consisted of Carl R. Anderson, vice president and committee chairman; J. Stanley Hill, second vice president and actuary; and Herbert G. Bartholdi, second vice president and controller, was the early adoption of a truly consolidated system.

One big step

A second basic decision was to take one big step toward this goal rather than several little ones. Faith in the ability of the people within the company to make such a conversion and the belief that it would save money over a piecemeal function-by-function approach, were prime considerations leading to this decision.

The impact of these decisions came home in May of this year when Minnesota Mutual Life completed conversion of its files for 220,000 policies to its magnetic tape Burroughs 205 electronic data processing system.

Beside the major applications, the computer is also calculating premium deposit interest, handling mortgage loan transactions and preparing financial statements and rate tables.

In choosing the equipment to accomplish its CFA program, Minnesota Mutual Life blended two "classic" methods: choosing a computer to match a previously developed system and devising and refining a system to fit a chosen computer.

The pressure is off

According to Bartholdi, "First we developed a set of standards to measure the several computer systems. Then we tried to take advantage of the characteristics peculiar to the computer we chose."

The standards by which Minnesota Mutual Life chose its computer included:

1. Balance between memory capacity, computing ability, input-output.
2. Computation speed adequate to allow completion of the primary application in the allotted time.
3. Purchase price which would produce maximum long-term savings.
4. Compatibility with the Minnesota Mutual Life punched card installation.
5. Reliability—from operational and service standpoints.
6. Availability.

After careful study of the medium-scale computer systems then available, it was decided to purchase a Burroughs 205 magnetic tape system. The computer was installed in July, 1957.

In purchasing its computer, Minnesota Mutual Life was not deterred by the possibility of ultimate obsolescence. "We were concerned with what we could save right then," Mr. Hill emphasized, "and we reasoned that if we could save $100,000 a year by starting immediately, why wait until 1970."

The decision to purchase was dictated primarily by the savings offered over rental. The $350,000 purchase price could be overtaken by monthly rental of $12,000 in less than three years. "Of course, purchase might be considered natural for a company like ours, since we are suppliers of capital—not users," Hill added.

"Not only did we have faith in our ability to make CFA pay off, but we had faith in the 205 as well—it was an accepted, proven machine.

"Having a purchased system took some of the pressure off the need for immediate full utilization. Under lease, there is undue pressure to get the job on the computer right now, to squeeze the rental dollar . . . often to the detriment of the general long-range program."

An important pause

Director of data processing Herbert F. Cherry explained that making the conversion on their own machine allowed the EDP task force to pause for important second looks at where they were going and why. "We've been able to proceed at our own pace—to correct errors and to modify our ideas in the light of changed perspective—making sure that our system is basically sound."

One such "second look" allowed reducing from seven to two the number of passes necessary to get the master record. Another modification of earlier ideas resulted in removing the evaluation information from the master magnetic tape record. The original plan called for updating every time a premium was paid.

"We now maintain this information concerning company reserves on a separate reel, which is updated quarterly," Hill added. "As a result, we've cut our early estimate of one minute for conversion processing time per record to a small fraction of this."

Other early timing estimates have proven out very well; the CFA billing run meets the original timing target of nine hours a day within minutes. Status updating takes close to four hours a day.

Under full system utilization, the company's estimates of hours consumed each week for major applications have proven essentially correct. The CFA billing job requires 60 hours each working week. Status updating takes 19 hours, and status

Chad Diehl, computer room supervisor of operations, at console of the Burroughs 205 computer.

requests consume 5.5 hours. Transaction register takes some 14 hours of time on the system, and policy issues require 4 hours.

Mortgage loan applications consume 4.5 hours and 12.8 hours is given to group applications. Federal Land Bank, supplementary contracts, premium deposit accounts and other activities in this area take 1.5 hours each week. Miscellaneous actuarial work requires another 3 hours and preventative maintenance is given 12 hours. Debugging and changes require some 5 hours of time. Total operational time estimated for the system is 141.3 hours per week.

The main framework of Minnesota Mutual Life's early data processing dream has remained essentially untouched in actual operation.

Bad time-and-dollar sense

Certain integral features of the CFA program designed to take advantage of equipment characteristics have survived along with the early time estimates. An outstanding example of this adaptation is the use of the Datafile for status referral.

The basic problem was that of rapidly answering daily random-order requests (around 12,000 a month) for policy status information. To fulfill these requests by referring to the master file—maintained by due date on 40 reels—would have made bad time-and-dollar sense.

The Burroughs 205 Datafile—an on-line multiple-tape storage unit—provided an answer. By spreading condensed policy records across Datafile's fifty 250-foot-length tapes, Minnesota Mutual Life could provide a direct random search. Each tape has two addressable lanes, offering 100 major filing categories—each with 1,000 addressable 200-digit blocks.

Read-write heads, which travel back and forth beneath the tapes, select the correct lane upon computer demand.

A 50-digit record for each of the company's 220,000-plus policies is recorded on one Datafile, which has a capacity of 20-million digits. The abbreviated records are ordered by terminal digit—the four low-order digits of the policy number—with space for 40 records left in each terminal digit grouping. This status file is updated daily.

The Datafile's 50-digit status record contains only that information needed to handle ordinary policy service requests. This includes policy number, collection office, how-pay code, premium paid to date, loan interest paid to date, loan balances, dividend option, dividend balances, and the last reference to the Transaction Register.

Requests in the form of letters or phone calls are key punched, then collected for processing twice daily—at noon and in the evening. A request card initiates a status inquiry program in the system to call out the appropriate record. Access time ranges from six to 17 seconds per record.

Continued on Page 44

Why Offset Paper Masters by Xerography?

What's xerography?

A dry, clean, fast, electrostatic copying process that economically prepares offset paper masters for duplicating. You can enlarge, reduce, or copy size to size. Original may be anything written, printed, typed, or drawn. Equipment used is called XeroX® copying equipment, made by Haloid Xerox Inc.

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Can a copy ever be better than the original?

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What about costs?

Costs are surprisingly low. There are many reasons: xerographic materials cost only a few pennies per master. No special offset paper masters are required and none are wasted. Operator's time is lower because there are no critical adjustments for exposures. The more you need offset paper masters, the more you'll save by xerography over any other method.

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How about length of runs?

You get much longer runs from masters prepared by xerography. Because of their durability, xerographic images do not break down from wet chemicals, thus last longer, and produce much lengthier runs—5,000 and 10,000 copies are not uncommon.

Do masters have to be "hardened" after preparation by xerography?

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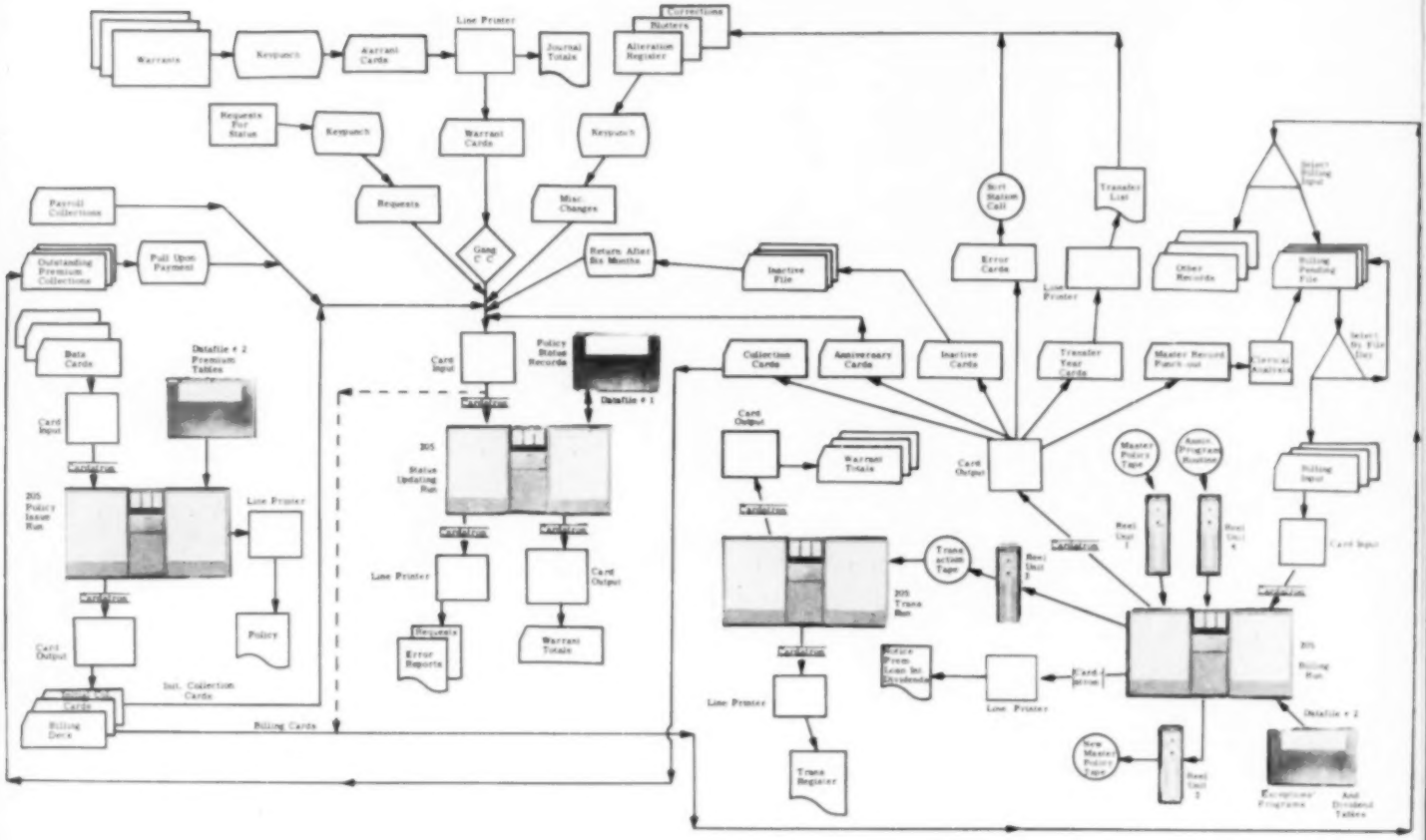
Minnesota Mutual Life's Consolidated Functions Approach



Consolidated Functions

Continued from Page 42

The master record for all policies is maintained on 40 reels of magnetic tape. The 600-digit records are in order by due day, collection office and policy number. Separation by due day allows Minnesota Mutual Life to run the complete set of tapes only once a month. Updating of the master tape is done monthly, 20 days prior to the premium due date.

An intricate manipulation

The rather lengthy master record—and establishment of the Datafile status file for handling daily request service—fit into the master plan. That plan calls for a monthly cycle, on-line printing of notices, and speed as an objective only at a cost the company could afford.

On-line printing was made feasible by Minnesota Mutual Life's billing volume—approximately one out of every four policies processed requires a notice to be printed—and by the buffering feature of the Burroughs 205 Cardatron card-handling sub-system. Fixed-format information necessary for notice printout is kept in the printer's storage units.

Although primary data processing has been the conversion to CFA, investigation of other profitable uses of the computer has continued.

Just recently, the company turned over to the 205 the task of preparing the heart of its detailed interim and financial reports. Intricate manipulation of 1,500 items to produce 13 pages of financial information is now handled by the computer in 15 minutes. Using standard tabulating equipment, the same job took up to two and one-half days.

Another application recently completed is the Rate Book Program. Here, one card triggers up to six hours of computation. The card contains the basic data necessary to compute the full range of payments for every age between certain limits on one payment plan of a particular life insurance plan.

Continued on Page 46

Soon available to all executives involved in business automation and data processing . . . .

An Important New Handbook

"Determining Salaries for Computer Personnel"

Published by
MANAGEMENT and BUSINESS AUTOMATION MAGAZINE

Edited by
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on clerical and managerial compensation plans

An actual operating manual containing the necessary forms and procedures for the administration of an over-all evaluation program for computer positions. It includes the results of the first nationwide survey of computer department salaries. The material is applicable to all types of business, industry, and government operations.

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Here are the specific subjects covered in the manual:

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3. Position Description Forms for Classifying Positions
4. Rating Scale Used for Determining the Point Values of the Standard Positions
5. Summary of Point Ratings for Checking Relative Rank of the Standard Positions
6. Survey Data for Determining Salaries for the Positions
7. Evaluation Chart for Determining Relationship of Actual Salaries to Point Ratings of Standard Positions
8. Analysis of Evaluation Chart for Developing a Schedule of Position Grades with Salary Ranges
9. Comparison Charts for Checking Over-all Evaluation Structure
10. Position Grade and Salary Range Record Sheets for Recording Classification of Employes
11. Procedure for the Calculation Steps Within Each Salary Range
12. Policies and Procedures for Administering the Evaluation Program
13. Area and Industry Supplemental Data

About the author

Philip H. Weber heads his own company specializing in compensation plans. Formerly with Business Research Corp., vice-president in charge of all client work in personnel field. Established evaluation plans for such companies as Cincinnati Milling Machine Co., Olin Mathieson Chemical Corp., The Northern Trust Co., Detroit Edison Co., United Air Lines, Inc., Lone Star Cement Corp., Admiral Corporation, Armour and Co., and Weyerhaeuser Timber Co. Served as president of Industrial Management Society. Frequent speaker and writer on wage and salary administration problems. Directed MBA's first nationwide study of machine accounting salaries in 1959.

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☐ Payment enclosed ☐ Bill me ☐ Bill my company

Consolidated Functions

Continued from Page 44

The results are punched out in cards for off-line listing, with an on-line listing of every payment for every duration also produced. Both listings are necessary, since law requires preparation of the payment plan for every possible duration. But such detailed printout of the rate book is neither feasible nor necessary. For instance, the rate book may spell out payments for the first 15 years of the plan and then jump to 20, 25 and so on.

The off-line listing becomes a master sheet, which is photographed, then reduced for offset printing of the rate book. Extra copies of the sheets are also made and inserted into appropriate policies, saving duplication of effort in preparing the policy.

To each his own

There are four programs to cover some 40 plans —life and endowment, term and annuities—plus six riders. It took William H. Gilbert, assistant actuary, four months to program and code these applications.

The life and endowment rate book program consists of 3,000 steps plus 50 working areas on the 205's magnetic drum memory, which are set aside for various tables, interest rates, etc.

The program lists all the premiums which will be required, and generates the policy's terminal reserves. The program also calculates (a) initial reserves, used in the dividend formula, and (b) the mean reserves, used in year-end evaluation work.

The complex actuarial mathematical formulae by which the rate books are computed were handled in the past on IBM equipment. A 602A was used for producing supplements to the rate books. The magnitude of the work performed by the Burroughs 205 on this project alone is estimated as equivalent to 30 clerks working at desk calculators for six months. Savings over earlier manual and tab machine methods are estimated at $35,000.

Development of such important "secondary" applications is the direct result of an early decision to decentralize programming. Shortly after selection of the Burroughs 205, 15 key men—most of them supervisors and managers—were given one-week programming courses along with the full-time programming staff.

These people brought with them detailed knowledge of the applications—and took back to their departments a solid acquaintance with the ways of the computer. All told, 27 people throughout the company can program, and any one could be called in for key one-shot jobs.

"Although they would not all qualify as expert programmers, they have gained sufficient ability to make significant contributions to the CFA programming activities," Hill explained. "What is far more important, they have all been active participants in all phases of the Consolidated Functions Planning. Having worked on the plan and contributed so vitally to it, they have 'made it their own," and have spared no effort to make sure that it worked."

The secondary applications stemming from the decentralized programming approach are considered by Hill as "the real velvet, since our primary routine would not take us much beyond the break-even point." It is not unusual to find the company interested in saving money with their computer. What is unusual is the manner in which they have gone about estimating the size of those savings—and establishing follow-through controls to see that the savings are achieved.

Minnesota Mutual Life began by establishing a ratio between hourly computer and clerical costs, by which they could measure which jobs should be put on the computer. Figuring a 100-hour computer work week, management then established general savings goals, which turned out to be $100,000 a year—based on five-year amortization, and a ten-year use of the system. By using a service bureau cost accounting system, management has been able to keep its fingers on just how much the computer is costing, and what savings it is making possible.

Halos for hardware

Each job performed on the computer has a three-digit code number, along with decimal notation of the number of system hours consumed by the job. Later punched into cards, this allows multiplication of the number of hours by the hourly computer rate to determine the cost of that run. The operator also notes whether re-runs have been caused by errors from within or outside the data processing "shop."

Computer rates—$30 an hour—covers labor, machine costs and maintenance, as well as prorated purchase and installation costs. Initial site preparation cost for the 2,000 square foot computer center—including air conditioning, special flooring, ductwork and wiring—was $45,000. Also included in this figure are costs of partitions, and for a special sliding door, operated by an elbow-level pressure plate.

Maintenance costs, excluding service engineer

salaries, include approximately $5,000 for tools. In addition the company stocks $20,000 in spare parts, which average out at a cost of less than $400 a month.

"It's still too early to say whether we'll achieve the savings we've predicted," says Hill. "But we have no complaints about the hardware itself, which has been outstanding. We have a two-year reliability (availability) record of 97.2 percent for a complex magnetic tape system. And we have been averaging 130 hours a week.

Where do we go from here?

"With completion of our conversion to the computer system, and establishment of our CFA program, we can now take a new look at where we've been . . . re-evaluate our methods and sharpen some of our approaches," states Cherry. "This will not mean merely perfecting routines or adding new applications, but capturing additional savings . . . making sure we have gleaned every possible by-product from our system. Nor can we rest on past accomplishments. The big question now is 'Where do we go from here?' Certainly our successful use of the Burroughs 205 puts us in a sound position to thoroughly and objectively measure the dimensions and the role of data processing in our future." Cherry feels that "the 205 has helped reduce unit costs, and enabled us to maintain our competitive position among mutual life insurance companies."

Minnesota's management realizes that the company is somewhat short of its early dream of a fully automated system: "We have not, of course, realized that dream," Bartholdi admits, "but I believe that we are closer to a fully automated system than we would be if we did not dream."

President Harold J. Cummings endorses the system with this statement: "We are well satisfied with the first results of our pioneering efforts in electronic data processing. We believe that we're three years ahead of companies just initiating such a project—a project every company our size will have to undertake some day. Now that conversion has been completed we can begin to realize the savings anticipated. These savings and the related by-product advantages of our computer operation will help us serve our customers better and faster . . . and enable us to continue our rapid growth, which in a relatively short time has made us one of the 20 largest mutuals in the nation."

A dream based on reality and flexibility such as Minnesota Mutual Life Insurance Co.'s with its integrated Consolidated Functions Approach program certainly proves that at least one company did not dream in vain. ■

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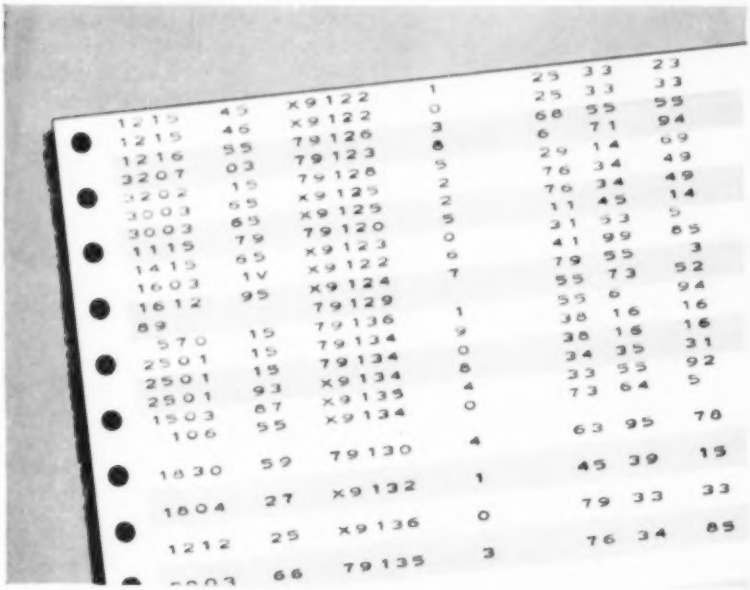

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The Government Evaluates

Continued from page 32

have worked out an arrangement whereby in the near future the magnetic tape developed by the VA for benefit payments will be used by the Treasury for check writing; and in the preparation of this same tape, VA will insert address codes which will make it possible to pre-sort the checks by location, speeding up the work of the Post Office.

There are other examples as well. The Treasury collaborates with the General Accounting Office in reconciling Government checks—with appreciable savings in processing time and costs and with a higher degree of accuracy than was ever before possible. There is a continuing campaign to exploit the many areas that exist for interagency integration of systems.

Five-point plan

It is somewhat difficult to look too far ahead and say what is in store for ADP and IDP programs for the Government. Final answers to the questions posed today cannot be answered today, but interim answers are now available and will be replaced as fast as is possible with definite answers.

There are five important considerations to come from the progress to date:

First, the Bureau of the Budget has a program for supplying administrative leadership in ADP utilization in the Government and will implement this program vigorously. All budget examiners, management analysts, statisticians and accounting personnel, as well as the Director and his key assistants, are aware of the potential of ADP equipment for management improvement. A small staff is being organized to provide the Bureau and agencies with the general, over-all guidance and assistance needed as they move forward to exploit the potential.

Second, all concerned are determined to move ahead, but all are equally determined that the pitfalls

of the past and the new pitfalls to be encountered in the future will be adequately considered when applications are being planned.

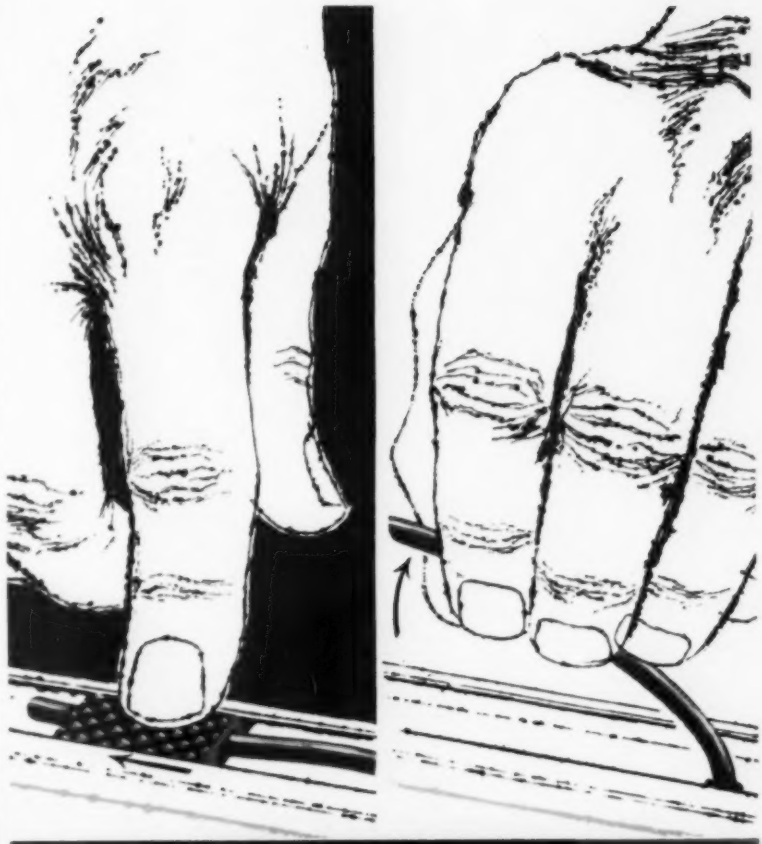
Third, the Bureau expects no special or additional controls on individual ADP applications. The normal budget review process, long established, will continue to be the primary means of reviewing the applications. The underlying concept in the Government's program and in the plans for giving leadership to that program is that the Bureau will advocate and energetically support sound programs in the departments and in their bureaus for the management of their ADP equipment utilization. It has to be this way because no matter how effective the Bureau or other central agencies may think they are in their over-all leadership, if there is not good management at the departmental level, or lower, there won't be good management at any level.

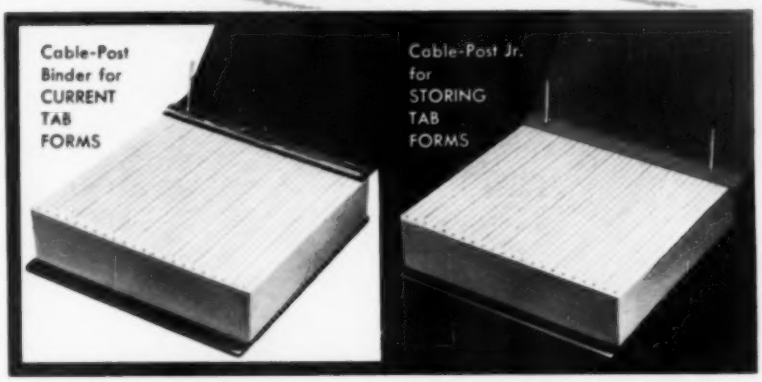
Fourth, in the statistical and reports control programs of the agencies—and in the statistical standards activity of the Bureau of the Budget—it is felt that the use of ADP equipment offers an opportunity to deal more effectively with one of the long-standing and perplexing problems of management—supplying accurate data to those supervisors and executives who need and will use the data to make informed decisions. ADP does nothing if it doesn't insure an orderly flow of meaningful data for use in more effectively managing the multifold activities of the Federal Government.

Hardware hypnosis

To do this job, it is most important to avoid becoming enamored of hardware. It is not hardware that gets the job done; it is systems—conceived in breadth and developed with clear objectives in mind. Those who get a fixation on equipment—"hardware hypnosis"—are in for trouble. Data development is systems oriented, not machine oriented, and asking too much of a machine, or distorting the needs to fit the equipment, will fail in the final analysis.

Continued on page 52





Here's a $6.10 value for $4.00

Just to get introduced to you — These two binders are the best for marginal punched forms used with data processing equipment. Both binders have the same type of locking mechanism top and bottom. Just push the slides together. Up come the cable posts. Off come the covers. You can load from the top — unload from the bottom. When it is time to store the records, you change the covers instead of the sheets. Think of the time you save.

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For More Information Circle Reader Service Card No. 175

You dial... IBM cards do the talking

Another advance in IBM TELE-PROCESSING*—the IBM 1001 Data Transmission System. It's a low-cost method of collecting data from distant locations over regular telephone lines.

Now all you need to send IBM cards home to Central Accounting is a low-cost device smaller than a typewriter. You just call the receiving location on the telephone and insert the cards into the IBM Card Reader. Variable information can be introduced through a keyboard. At the receiving end, identical data is automatically punched on cards by the IBM Card Punch. The transmission charge is the same as for any telephone call.

*Trademark

The Card Reader and Card Punch are the sending and receiving elements of the new IBM 1001 Data Transmission System. Used in conjunction with telephone company service, such as Bell System Data-Phone, the system can transmit pre-punched cards or information keyed in by the sender. No additional punched card equipment is needed at the sending end.

This new advance in IBM TELE-PROCESSING means that a central data system, such as the IBM RAMAC® 305, will be able to update records of transactions periodically reported from many scattered locations such as centralized payroll and inventory control, cash reporting from branch offices, store-ordering of stock in supermarket chains.

WHAT IBM TELE-PROCESSING MEANS TO YOU

This system is a further extension of IBM TELE-PROCESSING—a concept backed by years of IBM experience in data transmission. It makes possible faster data flow and better management control. Ask your IBM representative about the new advances in IBM TELE-PROCESSING and how they can help your company gain peak efficiency in data processing applications. Data Processing Division, International Business Machines Corporation.

IBM® TELE-PROCESSING

The Government Evaluates

Continued from page 49

Fifth, as the ADP program in Government moves ahead, one very necessary ingredient must be present. This ingredient is indispensable in an ADP program—call it common purpose, coordination, cooperation, or teamwork. Organizational lines, functional lines, geographical lines and even professional lines that have presented barriers to efficient data processing systems in the past can no longer be permitted to be barriers in the future.

To pursue the broad systems approach and to actually integrate data processing, which is inevitable, on an interagency basis, compartmentalization will have to stand aside. Artificial boundary lines will have to disappear, and experts in science, engineering, finance, accounting, logistics, personnel, management analysis and many other functional or professional fields will find that the only course to follow is one which involves a common effort.

Cross over the bridge

None of the things needed to insure successful ADP utilization in the Government will prove easy to accomplish. Even with the utmost in cooperation within the Government and with the equipment industry, many bridges remain to be crossed. Here are a few:

One, the centralization-decentralization problem. This has been around for years and has the habit of cropping up frequently. ADP equipment encourages centralization of data processing; as a matter of fact, in some cases the justification for acquiring this equipment becomes valid only if centralization takes place. This means that computers require a reconsideration of other decisions to decentralize.

Two, the ADP equipment compatibility problem. This will plague the Federal Government for a long time to come. However some inroads have already been made. One example is the Department of Defense-sponsored study, with the aid of equipment manufacturers, which has produced COBOL—Common Business Oriented Language—(MBA, March '60). Under proper conditions this could be used to overcome in part some of the incompatibility questions many agencies face, but there are still many aspects to this problem.

Three, the vulnerability problem. Much is being staked on the capabilities of computers to process the data essential to the continued operation of Government functions that are necessary in wartime as well as in peace. There is a big job ahead to assure the preservation and continued operation of equipment under all conditions and at all times. As in the compatibility problem, some progress has been made in the matter of vunerability—but there is still a long way to go.

Vaguely a purpose

Four, the progress assessment problem. Finding the answers to the question: "How effectively has the use of ADP equipment in the Government been up to this time?" is proving both difficult and enlightening because of the few criteria developed so far for assessments of this kind. As yet there isn't sufficient criteria available or confidence in that which is available as the right kind to use. But, with the help of various departments, some of which have already begun to develop assessment procedures, a pattern will soon be developed for evaluating progress and status in the utilization of equipment.

There are other things that have been learned from using the limited evaluation measures employed to date. One is that almost invariably, ADP costs are underestimated. Variances run as high as 50 percent over budget expectations.

There are several causes for this, such as an underestimation of machine time required; failure to allow for setup time, "down time" and maintenance; and the fallacious assumption that workload will remain constant.

It has been found that the purposes behind the acquisition of a computer are often very vague or general to the point of leaving the impression that the real purpose is to get the computer first and then figure out how to use it or what to use it for.

It can be shown that computer programming, systems analysis and the writing of instructions—with rare exceptions—take longer than expected.

It has been learned that there seems to be a general tendency to overlook certain cost items when estimates are made. Some of these are for supporting equipment, building modifications, training and travel.

Time to balance

In some cases, punched card equipment due to be given up when the computer is installed somehow is not released. In other cases, punched card or manual systems due to be discontinued are not, with a resulting duplicate system in action. Also, in cases involving parallel operations—where new and old systems operate concurrently until the new system is debugged, it has been found that the period of parallel operations is usually much too long—six months in fact.

There is evidence to show that in the use of computers for business management, there has been a trend to concentrate upon administrative types of systems—payroll, personnel accounting, cost accounting, appropriation accounting, inventory accounting and the like—while the substantive operations of many of the agencies have been ignored or intentionally set aside for the time being. This kind of imbalance was expected, but it is also expected that something must be done about it, and soon. The fact that the Interagency Committee has pointed to this imbalance is a good sign that it will get the proper attention.

All of the findings of the task force units and other studies have not been as unfavorable as those highlighted. There are many applications which stand as models of "going" operations, but this cannot always be the case at this time.

The main objective is to learn, and learn fast, so that the next decade will guarantee that a better than credible job will be effected throughout all Federal Government ADP operations. ■

Decoding unit unscrambles signature.

Encoding device photographically garbles signature.

Signature Scrambler Foils Forgery

Passbook signature is illegible to the eye.

TO FOIL the efforts of forgers who might steal or otherwise obtain an indentification card, bank account passbook or credit card, the LeFebure Corp. has developed the Autho-Visor system which optically scrambles signatures on these documents making them impossible to copy.

The garbled signature, however, becomes perfectly clear when viewed through a special reading device. The signature card of a bank customer, for example, is processed through the photographic encoder unit and permanently recorded on his passbook cover in scrambled form. When he presents a withdrawal slip and his passbook to a teller, the teller inserts it into the reading device and makes an immediate comparison of the two complete signatures. The comparison takes an average of four seconds.

This speed-up, LeFebure officials pointed out, is one of the main advantages of the system. The time-consuming chore of "looking up" signature cards for each customer is eliminated. Similarly, the system provides a speed advantage over closed-circuit TV operations where a central file clerk must still put the signature card in front of a camera for the teller to read and verify.

The cabinet-sized encoding console includes a master reader device, an annealer (heat) unit, developer, control panel, encoder and timer. The "reader" or decoding unit is desk-top sized and simple to operate. Each decoding unit is an independent machine requiring only a standard electric outlet to supply its power. The encoding console sells for $3,500 and the "reading" units are $425.

Banking organizations have been the first customers for the Autho-Visor system. Installations at the Howard Savings Institution in Newark, N. J., and the Union Dime Savings Bank of New York are scheduled for this month.

LeFebure Corp., however, foresees a much wider range of applications, especially in credit organizations and in security operations.

At the present time, the company offers individual coding "prescriptions" for each customer which means that the encoded image in one passbook cannot be read by another bank's decoding unit. Circle No. 17

An MBA
Product Preview

'Productograph' Introduced Here By Farrington

A production control center, dominated by the Productograph console receiving unit which can supervise up to 200 remote production machines.

A PRODUCTION control system, designed to reduce manufacturing equipment down time and to record operations automatically, will be introduced in September by the Farrington Manufacturing Co.

"Productograph," as the system is named, was developed in Germany and is now in general use in more than 200 plants and industries in Europe. There are two installations in the U. S. It will now be sold, serviced and made in the United States by Farrington Instruments Corp., a newly organized subsidiary of Farrington.

The Productograph system is keyed to a console receiving unit located in a production control center. One console can supervise up to 200 machines. Impulse transmitters — such as micro-switches, voltage relays, flow meters or photoelectric cells— and a call station, installed next to the production machine, provide instantaneous and continuous communication with the console operator.

Through this telecommunication system, machine operating times, down times and the causes for down times are automatically recorded audio-visually on a special graph and on a tape recorder.

By using the call station, a simple control panel and the two-way telecommunication system, the individual machine operator can inform the production control supervisor of the precise cause of the machine stoppage.

In addition, the number of items being manufactured, the time units, nominal and actual output are automatically tallied—both on electrical counters and on linear counters. The linear counters provide a visual record of the quantity of items produced and production time elapsed.

A call station unit, located near each machine, is connected with the control console.

Using Productograph, Farrington officials explained, a production control supervisor can plan the manufacturing work schedule more efficiently and anticipate down times arising from machine breakdown, lack of materials, defective materials or any other causes.

Incentive payments for the machine operator can be computed and paid on the information recorded by the console unit.

The system has been used in Europe in many types of manufacturing operations, including: plastics, metalworking, silk weaving, paper, automotive, printing, packaging, chemicals, steel, shipyards, machine tools and household appliances. In one case it is being used to control the peak flow of city traffic. Circle No. 123

Where Do Great Ideas Come From?

From its beginnings this nation has been guided by great ideas.

The men who hammered out the Constitution and the Bill of Rights were thinkers—men of vision—the best educated men of their day. And every major advance in our civilization since that time has come from minds *equipped by education* to create great ideas and put them into action.

So, at the very core of our progress is the college classroom. It is there that the imagination of young men and women gains the intellectual discipline that turns it to useful thinking. It is there that the great ideas of the future will be born.

That is why the present tasks of our colleges and universities are of vital concern to *every* American. These institutions are doing their utmost to raise their teaching standards, to meet the steadily rising pressure for enrollment, and provide the healthy educational climate in which great ideas may flourish.

They need the help of all who love freedom, all who hope for continued progress in science, in statesmanship, in the better things of life. And they need it *now!*

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For More Information Circle Reader Service Card No. 177

The young lady is "calling" a card punch in a central station. When she makes connection, she will transmit punched card information over the telephone.

Sending Punched Card Data by Phone

An MBA Product Preview

SIMPLE, low-cost transmission of punched card data over regular telephone or leased lines has been achieved with the IBM 1001 Data Transmission System.

Used in conjunction with telephone company service, such as the Bell System Data-Phone, the 1001 system transmits both fixed data from prepunched cards and variable data manually entered on a keyboard. At a central receiving station, the information is automatically punched into cards which can be fed into a computer or accounting machines. Contact is established when an operator at the sending station dials the "number" of the punching unit at the receiving station. The punch will "answer" and establish connection without an operator in attendance.

The system makes use of a minimum amount of equipment in providing automatic transmission of payroll, inventory control, billing or other accounting data to a centralized base. It is suitable for any operation which has more than one office, warehouse or factory, and it can be used in a single building with more than one department.

The sending station requires modified telephone and a compact, terminal card reader and keyboard (for manual entries). The keyboard has 10 keys for entering variable information and five keys for remote control of the card punch at the central receiving station. A speaker in the terminal provides various audible signals between this unit and the card punch for operator guidance. The sending unit rents for $15 a month and sells for $575.

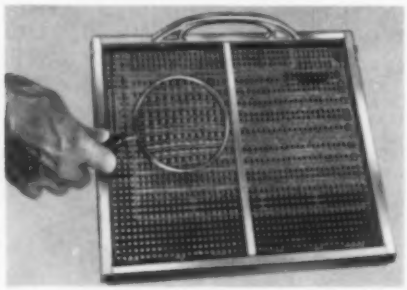
Cards are read and transmitted at the rate of approximately 12 card columns per second, and the system can handle between eight and 12 card transactions a minute. When the record has been transmitted, the operator presses a key to eject the card at the receiving end and automatically feed in a blank card.

Signals from the sending station pass through a Bell System demodulating subset at the central station and are converted to impulses used for card punching. The punched card code is fed directly and automatically into an IBM 24 non-printing punch or a 26 printing punch.

If there are several punches at the central station, the 1001 terminals can be connected automatically to any available punch to keep the cards coming in. Rental on the punching units range from $90 to $110 a month. Circle No. 119

NEW **Self-Contacting Control Panels with Unmatched Legibility!**

Easier to wire to check to change



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entrance register

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Edwards new two-part In-dicator Unit keeps track of key office personnel. Telephone operators or receptionists can tell who's in at a glance, without wasting time or using noisy voice paging systems.

● when flipped, toggle switches on entrance register automatically indicate on wire-connected switchboard panel whether key personnel are in or out. ● individual office switches can be substituted for entrance register panel. ● both systems install easily and quickly.

EDWARDS Company, Inc., Norwalk, Connecticut
Edwards of Canada, Ltd, Owen Sound, Ont.

☐ Please send an In-dicator System descriptive brochure
☐ Please have an Edwards salesman call.

Name_____
Title_____
Company_____
Address_____

For More Information Circle Reader Service Card No. 179

Optical Scanning

Continued from page 29

The Farrington systems use a "stroke analysis" approach to distinguish character familiarities and differences. As shown the "2" and the "9" seem to have some strokes in common. They both contain a top and middle horizontal stroke and have a vertical stroke in the upper right corner.

They have several differences too: The horizontal bottom and short vertical lower left are present in the "2" and absent in the "9." The short vertical upper left and lower right are missing in the "2" but are found in the "9". Extending this method of stroke analysis to all numeric characters it becomes possible to establish a table of characters and the component strokes which Farrington has labeled the "truth table."

The table below indicates which strokes must be present (plus mark); which must be absent (minus mark); and which may be ignored (blank) in defining each character. An important point is that the table is extremely simple to represent by computer logic circuitry—a key to Farrington's success.

Additional strokes (or differences) must be used as the range of character expands to include alphabetic characters and symbols.

Simplified "Truth Table"

	0	1	2	3	4	5	6	7	8	9
HT	+	−	+	+	−	+	−	+	+	+
HM	−	−	+	+	+	+	+	−	+	+
HB	+	+	+	+	−	+	+	−	+	−
SVUL		−	−	−	+	+		−	+	+
SVUR			+			−	−		+	
SVLL		−	+	−	−	−		−	+	−
SVLR			−			+	+		+	
LVL	+		−		−	−	+			−
LVR	+	+	−	+	+	−	−	+		+

Code: HT—Horizontal Top; HM—Horizontal Middle; HB—Horizontal Bottom; SVUL—Short Vertical Upper Left; SVUR—Short Vertical Upper Right; SVLL—Short Vertical Lower Left; SVLR—Short Vertical Lower Right; LVL—Long Vertical Left; LVR—Long Vertical Right.

The character is scanned to convert the character information to electronic video signals. These signals are received by the recognition program which is largely a special-purpose digital computer. It searches for various strokes or bars of the character and records what it finds and recognizes. From the "truth table" stored within the computer, an electronic decision is made that a particular combination of strokes is either a character of no character. If a character is recognized it is stored for release to the punch mechanicism at the proper time in the machine cycle. The entire scanning system in simplified form is illustrated by the diagram on page 29.

IBM, whose interest in character recognition dates back to 1932 when a patent was issued to Tabulating Machines Co., a parent company of IBM, has concentrated their development efforts on a matrix approach. According to Arthur E. Cooper, manager of the Owego, N. Y., Engineering Laboratories (the IBM corporate center for character sensing research and development) the character sensing equipment will be a combination of electronic, mechanical and solid state components using logic and processing techniques similar to map matching and display gear which IBM has previously developed. The ultimate aim is a machine capable of reading and processing any size document bearing any written message.

It would appear that Farrington has also played a role in IBM's "optic" developments, as the latter sometime ago entered into an agreement to pay Farrington a reported five percent royalties on manufacturing costs up to $1 million for use of patents issued or applied for before May, 1959. After the million mark is passed, IBM can use the patents royalty-free.

High speed turn around

R.C.A., also using the matrix approach, is working on three separate systems, all of which will tie into the company's present electronic data processing equipment. Two of the systems are aimed at high-speed reading (600 to 700 documents per minute) while the third is labeled as a "low-cost, low-speed" system, handling 150 to 200 documents a minute. All of the systems will produce magnetic tape or punched paper tape output, or can be attached on-line to a computer. Significantly, none will have a punched card output.

One of the high-speed systems is designed specifically for turn around document applications such as utility billing, insurance premium notices and production work tickets. The other, a full-page scanner, will accept complete documents such as loan, insurance or employment applications as computer input.

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Optical Scanning

Continued from page 59

developed an optical character recognition system which operates on the principal of obtaining complete two dimensional information on the character shape. Bits, corresponding to black or white elemental areas within the character outline are temporarily stored in a shift register to facilitate electrical registration and recognition. The printed character is identified by means of a hybrid form of correlation which permits, according to G.E., accuracy comparable to the human eye.

N.C.R.'s complete optical reading system will be field tested in the near future, and will consist of an optical journal tape reader on line with a low-cost sorting summarizing device. What is read will be processed and end-results reports generated.

While critics of optical scanning systems make a major point of "high reject rate," they usually fail to take into consideration the direct causes of these rejects. This is similar to blaming a keypunch machine for errors committed by an inept keypunch operator. Investigation of actual installations refutes the claims of unusually high reject rates chargeable to the equipment. At the First National City Bank of New York, despite the fact that no special type or self checking numbers are involved, and considering the extremely poor condition of media, the gross reject rate of less than five percent still compares favorably with any known MICR operation.

The fields continue to grow

The critics, however, are in a diminishing number as the field of optical scanning users continues to grow.

A new Farrington reading machine has been developed for government use; an advanced Page Reader for the Air Force's Air Research and Development Center which reads whole pages of typewritten sheets, including upper and lower case alphabet as well as numbers and punctuation, and translated them into electronic signals at the rate of 200 characters a second.

Time, Inc. is installing three Farrington scanners. Two of the models, transistorized commercial versions of the Air Force Page Reader, will be used to read postal card returns to Time, extracting account numbers and sales information.

Standard Oil Co., with the largest centralized credit card accounting operation in the oil industry, will use three Farrington units to speed punched card conversion of customer invoices.

National Data Processing Corp. of Dallas, concentrating for the moment on the retail field, has incorporated three pieces of equipment in its optical scanning program: a point-of-sale Recorder which produces printed sales slips, an IBM card record and records the complete sales record on a 3¼ inch tape; a Readatron Converter which, when attached to an IBM keypunch machine will read customer account number, sales amount and other pertinent information from the IBM sales record, punching the data into the card for accounts receivable processing; and a Readatron Reader, which will interpret the audit tapes prepared by the Recorder and convert the data into computer input.

This is a model of the optical character reader developed by the National Cash Register Co. It reads print produced by conventional cash registers, accounting machines and adding machines.

Baird-Atomic, Inc., Cambridge, Mass., has announced an optical-electronic print reader which reads alphabetic characters, punctuation marks and numbers from a filmed copy of the original.

Cornell Aeronautical Laboratory, Inc., N. Y., recently demonstrated a machine, the Mark 1 Perceptron, which will correctly identify letters of the alphabet—even letters of writing styles it has never seen before.

The Bell Laboratories have had initial success with a machine that will interpret hand written characters but the writing must be controlled.

The only apparent limiting factor to the wide spread use of optical scanning in the business world—with the exception of the banking industry which is heavily committed to magnetic ink character recognition systems and will probably remain so for many years to come—is the necessity at present to custom-build equipment for specific applications. This necessarily keeps the production cost per machine at a high figure. With the introduction of equipment that will provide flexible form feeds and program controls, all under the control of the operator — machines which are now in the development stage—optical scanning will certainly assume a dominant role in business data processing.■

World's *fastest* sorting system

PHILCO 2000 Data Processing System

The majority of all data processing involves sorting. Time saved on this operation is always significant—the answers you need become available more quickly; the equipment itself is freed for other use.

The inherent speed and capacity of the Philco 2000 are your assurance of highest possible sorting speed—faster than any other sorting system! For example, *the Philco 2000 has sorted 100,000 80-character records, having a 16-character key, in 18 minutes!*

Such high sorting speed can be obtained on any Philco 2000, regardless of size, without additional sub-systems. One of the many programming aids provided by Philco is a powerful Sort Generator program.

Call or write to arrange a test run of one of your sort problems on the Philco 2000 Data Processing System.

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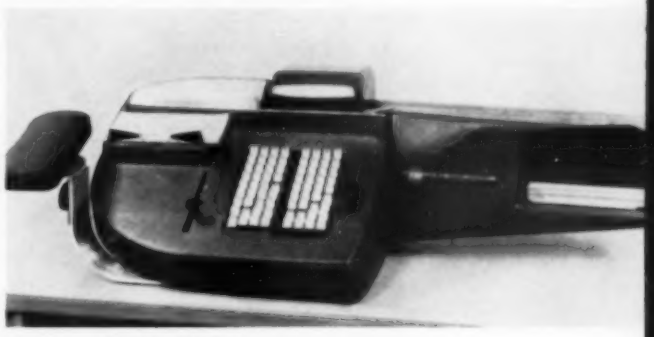
Account Number Encoder



Transit Number Encoder

FIVE different encoding machines, all designed to enter E13B magnetic characters on documents, have been previewed by bank operations officers at the Dallas, Tex., headquarters of the National Data Processing Corp.

The E13B type font has been specified by the American Bankers Association as the official type to be used in the Magnetic Ink Character Recognition program (MBA, March '59). As a part of NDP's effort to supply complete systems to banks, the company introduced a proof machine amount encoder, an adding amount encoder, an account number encoder, a transit number encoder and a full field encoder.

The proof machine amount encoder attaches to the standard IBM 802 or 803 proof machines and provides amount encoding of documents as an automatic by-product of the normal proofing operation. It automatically positions documents for imprinting and inserts them in the proper proof machine pockets. An optional feature is the imprinting of transaction code, also an automatic process.

The adding amount encoder enters amount and control data information on documents, accumulates two proof totals and prints a proof list on adding machine tape. This unit also has the transaction code printing optional feature.

The account number encoder imprints the customer account number—up to 10 digits—and counts the items automatically for batch control. It repeats keyboard entry for automatic multiple check encoding and can be shifted to encode punched card checks. As an optional feature, transit number can be encoded simultaneously.

The new transit number encoder prints the ABA transit number-routing symbol. It counts for batch control and shifts to encode punched card checks.

NDP has also announced a full field encoder which is designed to encode all fields on a check, if required, while operating basically as an amount field encoder and proofing machine. Circle No. 118

How to use electronic data processing without investing in equipment or personnel

Thousands of business firms and organizations are discovering you don't have to be a multimillion-dollar corporation to take advantage of electronic data processing. A single telephone call to any SBC office is all that is needed to make use of this advanced method of handling paper work.

What is SBC? The Service Bureau Corporation, to use its full name, is a closely knit national network of over 80 offices, many of which are equipped with IBM computers and all with IBM punched card machines. Each office is staffed with highly trained data processing specialists. Any data processing, tabulating, statistical or computing job can be handled easily by SBC.

How you can use SBC. Ready to serve at any time, SBC services are available on an hourly or job basis —for daily, weekly, monthly or special operations. No job is too large or too small. With its great variety of equipment and its complete staff of experienced personnel, SBC can handle any kind of work from the most complicated computation, to a single accounting report.

Some of the ways SBC can serve you. Payroll, inventory, accounts receivable, production schedules, sales analysis, engineering and design problems—these are just a few of the many activities for which SBC can provide accurate, complete, up-to-date reports.

One large industrial organization saved itself a lot of headaches by turning over to SBC the scheduling of vacations for its more than 3,000 employees. The computer, one official said, "Plays no favorites." The scheduling incorporated the individual employee's choice, seniority and departmental manpower requirements by job classification.

Just how fast is SBC service? The company mentioned above formerly spent eight weeks preparing its vacation schedule. The job was completed by SBC in one week. Another company saved much time on a beam design problem. After SBC studied the problem and programmed the computer, an answer was produced by the computer in ten minutes. It would have taken two months to solve by desk calculator methods.

Who uses SBC? Any organization is a potential user. Although the nation's 50 largest corporations are numbered among its clients, firms with under 100 employees form the backbone of SBC's business. Last year, more than 10,000 customers were served.

How to start. SBC welcomes the opportunity to discuss your data processing requirements. There is no charge for consultation. You pay for results only. Simply telephone the SBC office in your city or write to The Service Bureau Corporation, 425 Park Avenue, New York, N.Y.

SBC®
THE SERVICE BUREAU CORPORATION
a subsidiary of IBM—
over 80 offices
from coast to coast

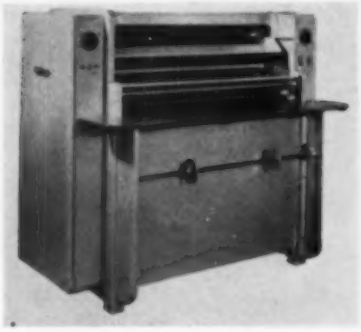
The most experienced Data Processing Service in the world

For More Information Circle Reader Service Card No. 192

MBA Showcase

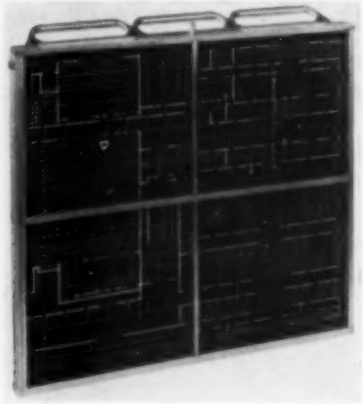
New Products for Business Automation

Compact Diazo Machines



Ruggedly constructed Revolute Meteors Model 40 and 60 compact, diazotype, reproduction machines feature synchronized printing and developing, simultaneous printing and developing of large prints and a simplified ammonia supply system. The machine is offered by Paragon-Revolute Division of Charles Bruning Co. The line, constructed of cast aluminum frames, features a diaphragm pump to provide the ammonia in exactly the amount required to match the machines' speeds up to 35 feet per minute. Circle No. 103

Legible Control Panels



Self-contacting control with high legibility for easier wiring, checking and changing are features of these new panels from Virginia Panel Corp. Specially developed screening process, inks, and paints give clear and large characters with high scratch resistance and long service. Some of the advantages are aluminum frame and contoured handle lightness, plastic-light covers with thumb pressure release. Circle No. 114

Gold Star File Line

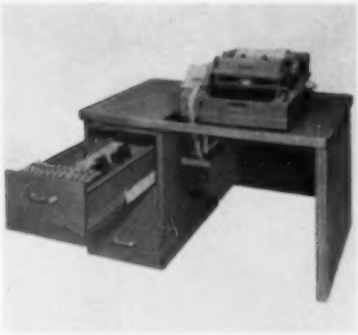
A new line of economy files has been introduced by The Wright Line, Inc. Called the Gold Star File Line the three-quarter suspension files are available in 20, 12 and four drawer models with full suspension available in the 20-drawer model. Drawers are interchangeable in any of the files, self-stacking with large handles and full card labeling. Circle No. 110

Flexowriter and Teledata Series Expanded by Friden

Documents such as orders and bills of lading, policies and policy records may be typed automatically and simultaneously on Friden, Inc.'s Systems Receiver Flexowriter, completing the line of Flexowriter automatic writing machines. By cable-connecting the Systems Receiver to a master Flexowriter Programatic, which can automatically prepare documents and control auxiliary operations from a code-punched program tape, one operator can handle accurate duplication of data on different business forms to be run off at the same time on each machine. Another product the Friden Dual Teledata Model 8C, is

the latest in the series of tape-operated communications equipment. This eight-channel code transmitter-receiver provides for the transmission of a single, continous tape at double the speed of the standard Teledata by transmitting alternately over two transmission channels, operating at the normal speed of 75 bits per second. Circle No. 101

Flexowriter File-Desks



Completely organized work stations for every Flexowriter machine operation is possible with the perfected Flexowriter File-Desks by Shaw-Walker Co. All punched data is organized and at the operator's fingertips for top speed machine production. Floor space is saved in the 60 inch desk which houses up to 3,500 four-foot tapes or 39,000 edge-punch cards in 12 square feet. Desired tapes or cards are available at the flick of the fingers as automatic-tilting Wobble Blocks support punched data with reference freedom. Circle No. 112

Statement Addressor

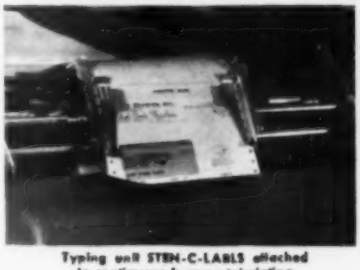
A statement addressor introduced by the Todd Co. Div. or Burroughs Corp. is designed for simple operation. Designated the B-1150, it handles all kinds of addressing reproductions faster than typing or writing. The economical duplicating method was designed specifically for statement addressing and labeling. More than 100 documents may be imprinted from one stencil. Constructed of lightweight plastic, it has only one moving part. Circle No. 111

Are you losing
$5,000 to $15,000 A YEAR
addressing multiple shipments?

If you regularly address 5 or more cartons per shipment you might be shocked to find out how much it is costing you to address your multiple shipments with antiquated, repetitive methods. They are not only time-consuming but are also subject to frequent errors and mis-shipments.

Addressing direct to PANL-LABL on carton is fast and easy.

The Modern STEN·C·LABL* Systems PROVIDE A TWO-WAY SAVING...



Typing on® STEN-C-LABLS attached to continuous form on tabulating machine.

Addressing direct to carton with die-impressed STEN-C-LABL.

1 As a by-product of office procedure

Your present method of preparing your invoices, orders, bills of lading or shipping papers can also prepare STEN-C-LABLS *at the same time*. Whether you use manual or electric typewriters, electric billing or accounting machines, slave machines or various magnetic tape and punched IDP systems, there's a STEN-C-LABL to fit your requirements.

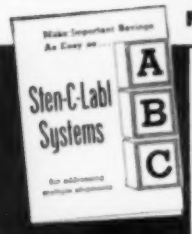
2 By making unlimited impressions direct to cartons, labels or tags

With handy squeeze-feed applicator, shipping department makes unlimited impressions direct to PANL-LABL printed on carton at no extra cost. Also addresses gummed labels and tags. Addressing is fast, neat, legible. Laborious, repetitive procedures are eliminated, preventing errors and mis-shipments.

DURABLY MARKED AND PLAINLY LEGIBLE at handling distance. A STEN-C-LABL address is sunproof and waterproof—becomes permanent part of carton. Reproduction is sharp and easy to read at handling distance.

IF YOU HAVE A MULTIPLE SHIPPING PROBLEM (regularly addressing 5 or more cartons per shipment), you may be able to save thousands of dollars with STEN-C-LABL. Thousands of present users are making substantial savings every year with a STEN-C-LABL System tailored to their requirements.

FREE BROCHURE gives full details!



MAIL COUPON TODAY!

STEN·C·LABL, Inc.
MBA-9, 1821 University Ave., St. Paul 4, Minn.

Yes, I'd like to know more about saving with STEN-C-LABLS.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

*Registered U.S. Pat. Off. The term STEN-C-LABL is the trademark and exclusive property of STEN-C-LABL, Inc. All STEN-C-LABLS are manufactured by STEN-C-LABL, Inc., St. Paul, Minnesota, under U.S. Patent No. 2,771,026. Other patents pending. Also available in Canada.

For More Information Circle Reader Service Card No. 183

2-Channel Time Recorder

An instrument designed to record and compare productive time of plant and office equipment is offered by the Standard Instrument Corp. The Two-Channel Recorder graphs simultaneously, on a single strip chart, the operating patterns of two machines, two functions of the same machine, or any two processes. It can distinguish between actual productive time and nonproductive idling time. It also features a built-in Time Totalizer—a read-out counter which continuously furnishes visual sum of productive time in hours and tenths, or minutes and tenths. Circle No. 116

Document Conveyors

V-belt document belt conveyors to speed the transmittal of routine office paperwork have been developed to save up to 100% of the time previously needed and are being manufactured by A. J. Bayer Co. The conveyor improves processing of orders, forms and requisitions, eliminates bottlenecks and order pile-ups, reduces time lag in inter-office paperwork transmittal and cuts down error and confusion. Aluminum channels are 3 inches wide with any number of channels going in either or both directions. Paper travels upright. Belts can be any height or length. Circle No. 109

Magnetic Ink Ribbon

A new type of business machine ribbon—made of paper—is designed to remove a barrier of handling billions of checks that annually pass through the nation's banks. The ribbon, developed by National Cash Register Co., imprints magnetic figures and symbols on checks and deposit slips. It is now used by the Bank of America. The paper ribbon coated with magnetic material solves the problem of allowing banks to imprint additional information. Circle No. 115

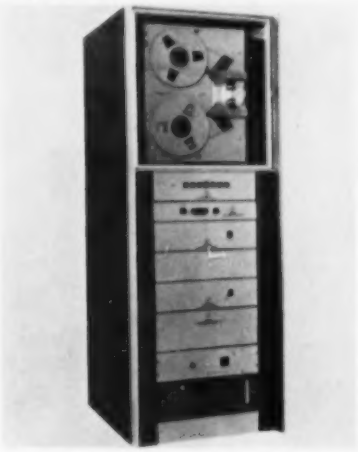
Universal Code Punched Tape to Card Converter

Automatic translation of punched tape data to punched cards is possible on a Universal Code Punched Tape to Card Converter Model C750 manufactured by Systematics division of General Transistor Corp. Using this device on IBM Model 024 or 026 Card Punches, any five, six, seven or eight channel punched tape can now be used as input to process all punched tape applications on punched card data processing systems. Normal operation of the Card Punch is not impaired by the attachment of the converter. A removable programming plugboard permits quick operator "plug-in" re-programming for different applications, usually in a matter of seconds. The C750 consists of Tape Reader and Control Module. Circle No. 102

Office Paper Shredder

The Auto-Shred office shredding machine was designed by Industrial Shredder & Cutter Co., as a practical and inexpensive method to destroy confidential records in offices where privacy is important. This new shredder is slightly larger than an electric typewriter and weighs only 70 pounds. The device is safe, noiseless and driven by a ⅓ h.p. motor. Circle No. 113

High Speed Tester

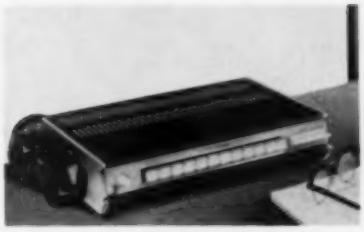


A magnetic tape tester Model 3320 announced by Potter instrument Co. detects tape defects as small as one bit length at speeds of up to 150 inches per second and packing densities as high as 1500 bits per inch. Faults are indicated by a pilot lamp on each channel and the tape transport stops on the fault, making it easily accessible for inspection and repair. Circle No. 108

Power Paper Drills

Round hole drilling and cornering requirements of offices and duplicating departments are made easier at less cost by two new power-operated drilling machines announced by the Challenge Machinery Co. These units feature toe-tip operated control which causes the paper drill to come down hydraulically at a touch of the control pedal. Drilling the standard three holes in a full ream of stock takes approximately 15 seconds. Circle No. 122

Book-Sized Intercom



Complete intercommunication with a new all-transistorized model, designed to overcome high noise levels, in a unit no larger than a book, is introduced by Talk-A-Phone Co. with their Chief Redi-Power intercom. The versatile, all-purpose unit is compact and lies three inches high on a desk. It has a self-compensating ability to deliver up to 20 watts of power for one or a group of stations. Standard features include private or non-private operation of masters and staffs at the user's choice, incoming call chime, external relay control for high noise level areas, busy signals which are visual and a monitoring signal. Circle No. 106

Now— A CHECK PROTECTOR WITH A BUILT-IN KEY PUNCH

F&E KEYPUNCH PROTECTOR

The Real Answer to Complete Account Reconcilement without Manual Key Punching

- No Key Punch Errors
- Source input-subsequent amount key punching eliminated
- Automatic-protected and punched amounts are simultaneous
- Standard IBM Code

Royal Companion Check Signing and Dating Machine Attachment Available

FOR — PUNCH CARD CHECKS • MONEY ORDERS • GIFT CERTIFICATES TIME PAYMENT RECEIPTS • INSURANCE CLAIM CHECKS, ETC.

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Chicago 14, Illinois
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DATA PROCESSING DIVISION

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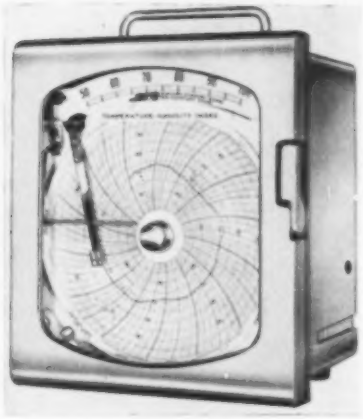
1158 W. Armitage Ave., Chicago 14, Ill.
Please send information on your Keypunch Protector
NAME.....
FIRM.....
ADDRESS.....
CITY.....STATE.....

For More Information Circle Reader Service Card No. 184

Comfort-Index Recorder

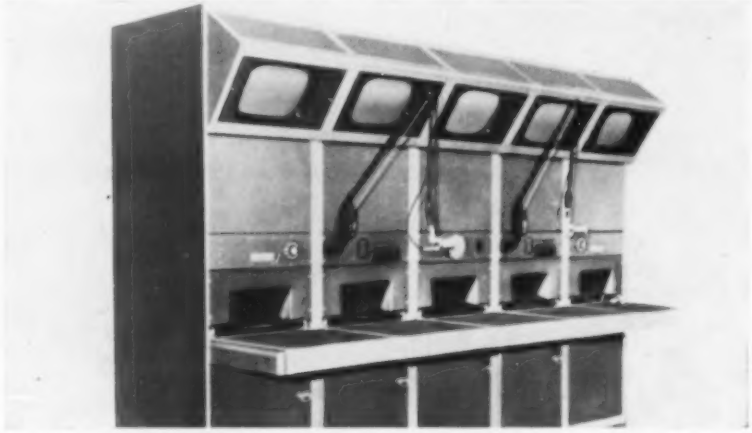


This instrument suitable for use in offices is a Comfort-Index Recorder introduced by the Weather Bureau last year and now being marketed by Bristol Co. It measures temperature-humidity indexes for periods as long as one week continuously. The combination of temperature and humidity considered optimum is 70. Circle No. 104

Victor Improves Data Punch

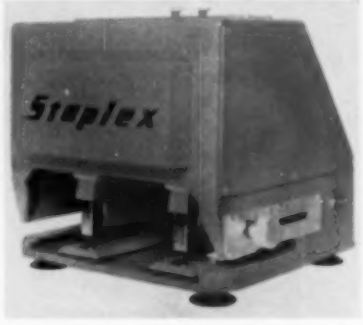
An improved Data Punch system is available from Victor Adding Machine Co. With the incorporation of the new Victor Premier 10-key adding machine and a tape punch, routine adding machine computations for data processing will be performed in a compact system for the preparation of faster, more complete studies of sales, cost accounting, inventory and payroll in offices and plants. Producing five to eight channel punched tape at a rate of 20 characters per second as a by product the adder also creates the regular printed tape. A variable field control gives optional control over columns punched. Circle No. 107

Nord Introduces Scan-A-Graph TV



The Television Utilities Corp., Div. of Nord, is now marketing a closed circuit television transmitter that produces a high resolution image without using conventional TV camera or lighting equipment. Scan-A-Graph '500' offers high picture quality and low cost operation to all phases of industry that have need for an inexpensive visual communication apparatus designed for the transmission of static information, such as in education, personnel identification, quality control and in security. As many as 500 stations in an area of several miles may be maintained and operated with a minimum of controls. A master video monitor allows any subject matter that will fit into an 8½ by 11 inch area, 16mm film or slides, handwritten or typed copy to be viewed at both ends on a 27 inch screen. The system is capable of 24 hour operation and is compatible with existing television equipment. It can be self-contained in an office desk. Circle No. 121

"Double Header" Stapler



An automatic stapler with two stapling heads may save up to 50 percent in labor costs, according to its manufacturer the Staplex Co. Designated the "Double-Header," the machine operates on 110 AC, features a patented solenoid drive used on the company's single-head stapler, and staples two places at once, instantaneously. All the operator has to do is insert the work to be stapled. Finished in gray, the machine is adjustable for center distance from 2¼" to 6½" between staples and depths from ⅛" to 3". It is useful in packaging and printing firms as well as in offices. Circle No. 105

Copies On Request

IDP Products in Action—A 28-page booklet from Friden, Inc. covers over a dozen major data processing systems which are controlled automatically by Friden business machines. Step-by-Step illustrations and concise explanations of letter writing, purchasing, manufacturing control and other applications are described in detail. Circle No. 131

Data Handling for Communications—Equipment, now available, and techniques and devices presently in test for efficiency in flow of information between the computer and remote stations are described in "Electronic Digital Data Handling for Communications" from Digitronics Corp. Circle No. 132

Panel and Wire Catalogs—Mac/Panel now has available its latest catalogs on control panels and wires for EAM and IBM data processing equipment. Circle No. 133

Direct Name Filing System—A 10-second filing and finding method is described in this color illustrated brochure citing the advantages of this indexing system by Yawman & Erbe Mfg. Co. Circle No. 134

"Recent Developments and Applications of Kineplex"—Reprints of a paper by R. R. Mosier, associate director of engineering and M. L. Doelz, vice president and general manager of the Collins Radio Co., western division are available from that firm. Circle No. 135

"Do You Talk 'Computerese'?"—Brush up your 'computerese' (computer language for conversation) with this pocket size 22-page glossary intended to make computer talk more intelligible to the layman. Offered by Minneapolis-Honeywell Co. Circle No. 138

Closed Circuit T.V.—"What Every Businessman Should Know About Closed Circuit T.V." is explained in layman's language. Lightly written with serious intent, this nine-page brochure from General Precision, Inc.'s GLP, Div. covers many basic applications. Circle No. 139

Programming of Repetitive Problems—An illustrated brochure, available from the Clary Corp. outlines how programming and solutions of repetitive problems may be written and executed by non-technical personnel on the company's DE-60 computer. Circle No. 140

"Around the Business World"—The Gardner Rubber Stamp Co. presents its complete line, with prices, of mechanical self-inking stamps for commercial and industrial use in a 17-page catalog. Circle No. 141

Filing and Indexing Aids—Modern filing methods, systems and equipment are offered in this catalog from Cel-U-Dex Corp. Circle No. 142

In-Plant Microfilm System—An eight-page, illustrated booklet describes on the premises microfilming, film processing, filling, retrieval and reproduction of engineering drawings at IBM Poughkeepsie. From Microfilm Products, Minnesota Mining and Mfg. Co. Circle No. 143

next month . . .

Rocketdyne's Computer Network

EDP plays an integral role in the company's operations—from controlling budgets to plotting rocket trajectories.

Engineering Communications at Redstone Arsenal

ATTENTION: SYSTEMS & METHODS DEPARTMENT

Use Gardner's SUPER-RITER Systems pen for work flow jobs where speed and accuracy are important.

Used with visible record cards, charts, fine figure work.

Precision engineered Super-thin Ball Point with Formulabs® pre-tested superior quality inks.

Manufactured to *Exacting* specifications in four brilliant colors—Red (504), Blue (501), Jet Black (509), Green (503). Instant dry, long lasting inks. Full 5¼" all-brass cartridge.

Talk about Economy! We pay postage anywhere in U.S.A. Your NET DELIVERED Cost is: Retail 39c each.

1 doz.	$3.25
3 doz.	3.10 per doz.
6 doz.	3.00 per doz.

Colors may be assorted in doz. lots. 10 day return guarantee. Order in quantity and really save. You can't lose.

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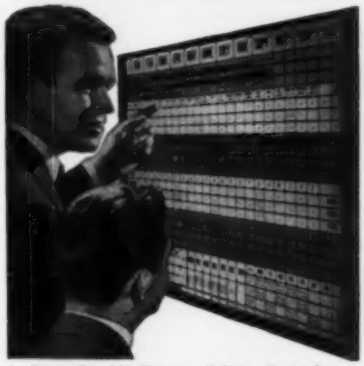
You Get Things Done With Boardmaster Visual Control



★ Gives Graphic Picture of Your Operations—Spotlighted by Color
★ Facts at a glance—Saves Time, Saves Money, Prevents Errors
★ Simple to operate—Type or Write on Cards, Snap in Grooves
★ Ideal for Production, Traffic, Inventory, Scheduling, Sales, Etc.
★ Made of Metal, Compact and Attractive. Over 500,000 in Use

Complete price **$49.50** including cards

FREE 24-PAGE BOOKLET NO. AB-30 Without Obligation

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GRAPHIC SYSTEMS
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NEWS

GE Opens MICR Service Bureau

The first MICR computer service bureau went into operation in the headquarters building of the General Electric Co. Computer Department in Phoenix, Ariz., last month. The center will be used, initially, by the First National Bank of Arizona.

The General Electric Co. has opened the first computer center in the nation which utilizes a Magnetic Ink Character Recognition system capable of processing checking accounts.

First customer for the center is the First National Bank of Arizona. This bank will use the facility until its own GE-210 system is installed sometime next year. (MBA, Feb. '60)

General Electric will use the system for day-time operations handling customer training and programming as well as service and sales demonstrations. First National will use the system at night.

Plans are already underway to expand the service regionally, and GE has announced that the centers will be extended to other key metropolitan areas in the near future.

A most recent announcement was made that the Valley National Bank of Arizona has also ordered a GE-210 system to coordinate electronic check-processing equipment at the VNB operation center. The computer will be combined with Intelex document sorters for processing checks, computing account balances and proofing and transit operations.

At the same time that GE was announcing its MICR center, Datamation, Inc., Englewood, N. J., revealed that it will sponsor a magnetic ink sorting service center to permit banks to make use of the new ABA approved magnetic sorting system without making the immediate capital outlay for equipment.

John Munoz, vice president, explained that the center will allow banks to start magnetic processing immediately, even if they plan to install a system of their own in the future.

Bendix President Keynotes Users Meeting

Malcolm P. Ferguson, president of the Bendix Corp., was the keynote speaker at the fifth annual meeting of the National Bendix G-15 Users Exchange Organization.

The three-day program, held in Pittsburgh, was devoted to special interest workshops and presentations on equipment, programming techniques and specific programs.

National Business Show Features CompuCenter

A unique electronic data processing display, the CompuCenter, will be the highlight of the 1960 National Business Show in New York City's Coliseum, October 24-28.

Six manufacturers, Philco Corp., Control Data Corp., the Bendix Corp., RCA, Remington Rand, and Monroe Calculating Machine Co. will present computer equipment in a special display area.

Plans call for a Bendix G-15 general purpose system, a Control Data Model 160 Computer and Model 180 Data Collector, Monrobots Mark IX, X, and XI, Philco S-2000 general purpose equipment, RCA 501 system and the Remington Rand Univac 90 system to be on display.

In conjunction with this exhibition, the NBS is sponsoring a series of conferences on the various aspects and effects of electronic data processing.

The program will include detailed explanations of the specific equipment by exhibiting manufacturers as well as application examples presented by users of these various systems.

Dashew to Open Data Center Network

A network of locally owned and operated Data Centers is being planned by Dashew Business Machines, Inc. for some 100 major marketing areas in the United States.

According to Stanley A. Dashew, president, "The installations are being made to cope with the national trend toward automating input for data processing." Local businesses can make use of equipment to service credit card systems, accounts receivable, inventory control and record keeping. Local sales for Dashew equipment will funnel through the centers.

Wright Line—Barry Controls to Merge

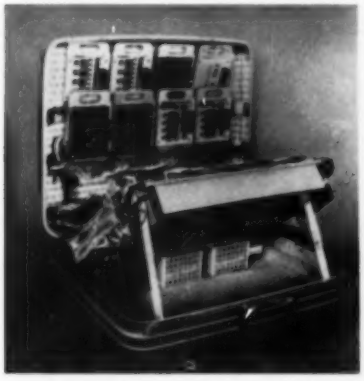
Pending the anticipated approval of stockholders at a meeting on August 31, the Wright Line Inc. and Barry Controls plan a merger on September 1.

The name of the new concern will be Barry-Wright Corp. with headquarters in Watertown, Mass. Wright Line will become a division of the Barry Wright Corp.

Barry is primarily engaged in the manufacturing and selling of various types of resilient mountings which are designed and engineered to reduce the transmission of shock, vibration and noise. Wright Line is primarily engaged in data processing accessory equipment and rotary files. The business of each company is expected to be continued on divisional basis.

Airlines Reservations—A "Case" for Univac

Remington Rand Univac engineers have taken a standard ladies' pullman case made of Samsonite and transformed it into a portable



demonstration unit of Univac's airlines ticketing system.

The suitcase unit is used for on-the-spot demonstrations to prospective purchasers. Packed in the interior of the unit—called the "Alpha-Numeric Programmer"—are a programmer, keyboard and a printer.

The keyboard provides the means of feeding passenger record system data to the central processor via the programmer. The printer displays the information as it is entered and also receives the reply from the central processor.

here's how VISIrecord

split-second record location

...at KELLOGG CO.

accelerated processing 33%...

One VISIrecord system now handles the scheduling and controlling of preventive maintenance for 96 departments. Processing of requisitions was accelerated at least 33%.

...at J. W. ROBINSON, CO.

reduced inventory time 248 man hours...

The VISIrecord furniture unit control system also helped increase turnover from 2.8 to 3.5, reduced merchandise return by 10% and cut delivery time.

...at FRIDEN, INC.

allows automatic preparation of 98% of needed purchase order information

Built around VISIrecord edge-punched cards, and the famous Friden Flexowriter, the almost totally automated purchase order system at Friden's Rochester, N.Y. plant keeps materials flowing to every production area.

The world's fastest visible record keeping system

...can help you

VISIrecord Systems Specialists have the know-how to analyze your record-keeping set-up. Their experience and the facilities available to them will enable them to provide you with a time and money-saving system. Write to Dept. BA-5 for case histories on above and any other applications.

VISIrecord, Inc.

375 PARK AVENUE, NEW YORK 22, NEW YORK

SYSTEMS SPECIALISTS IN PRINCIPAL CITIES

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Now Available
Programming Training Courses

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PROGRAMMING FOR BUSINESS COMPUTERS

Course 101

Prepare now for the new generation of Accounting Machines

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Business Electronics Inc.
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Over 4 years experience in Programming Training

Member National Home Study Council

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"Maggie" Magnetic Boards Keep You on Top of Every Operation

"Maggie" Magnetic Visual Controls offer the easiest and quickest way to chart sales, traffic, personnel or any other phase of your business. Colorful, magnetic indicators tell you at a glance if everything is in the right place at the right time. No cards, pegs or other nuisance devices to replace because "Maggie" Board with magnetic indicators last indefinitely. Pays for itself many times over because the first cost is the last cost.

Priced from $49.50 complete.

Write for FREE catalogue on the most modern and flexible control system available today.

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11 West 42nd Street • New York 36, N Y

Circle Reader Service Card No. 186

Social Security Unit Orders 12 RCA Systems

The Bureau of Old-Age and Survivors Insurance, which keeps the Social Security records and pays the benefits, has ordered 12 new electronic data processing systems from RCA to assist in its voluminous paper work operation.

Five RCA 501 systems and seven of the smaller 301 systems will be installed in seven payment centers beginning in January of next year.

Heads Research Unit Of Controllers Institute

L. C. Guest, Jr., vice president and controller of General Telephone & Electronics Corp., New York, has been elected president of the Controllers Institute Research Foundation.

Lease Plan Announced By Remington Rand

A new, long-term lease plan, covering systems products as well as typewriters and adding-calculating machines, has been announced by Remington Rand.

Nationwide Leasing Co., Chicago, will underwrite the program for Rem Rand throughout the country.

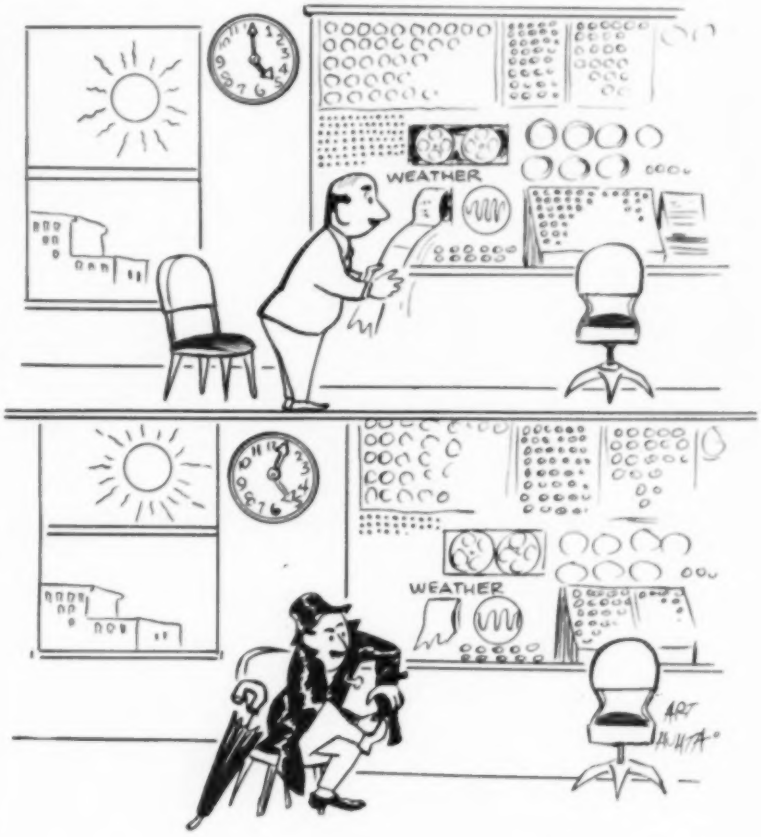
The leases will range normally from 39 to 65 months and will extend from $175 for a single adding machine to hundreds of thousands of dollars for complete systems.

Items included under the lease plan include standard and electric typewriters, adding machines, calculators, filing and record-keeping equipment, office furniture and systems products.

Hume Elevated to VP In IBM Data Processing

Warren C. Hume has been appointed vice president of the Data Processing Division of International Business Machines Corp.

Mr. Hume, who headquarters in Chicago where he is regional manager of the midwestern region, has been with IBM since 1939.



MBA's Calendar

September 14-17—Annual National Business Forms Associates (NBFA) conference, at Chase-Park Plaza Hotel, St. Louis, Mo. Write: NFBA Headquarters, 409 East Broward Blvd., Fort Lauderdale, Fla.

September 26-30—15th Annual Meeting of the Instrument Society of America and Third Instrument-Automation Conference and Exhibit of 1960 at the New York Coliseum, New York City.

October 10-12—International Systems Meeting (SPA). Hotel Commodore, New York City. Write International Headquarters, Systems & Procedures Association, 4463 Penobscot Bldg., Detroit 26, Mich.

October 10-12—National Convention, NABAC, the Association for Bank Audit, Control and Operation. Statler Hotel, Los Angeles, Calif. Information from Jack Craddock, NABAC, 38 So. Dearborn St., Chicago 3, Ill.

October 10-12—18th National Meeting of the Operators Research Society of America at the Statler Hotel in Detroit, Michigan.

October 19-22—American Records Management Association's Annual Convention and Records Management Workshop, at the Plankinton House, in Milwaukee, Wisc. Write: ARMA, 10600 Puritan Ave., Detroit 38, Mich.

October 20-22—Seventh International Meeting of the Institute of Management Sciences. Hotel Roosevelt, New York City. Session on Computers in Simulation. Information from James Townsend, 30 East 42nd St., New York 17, N. Y.

October 22-26—29th Annual National Conference of the Controllers Institute of America at the Hotel Fairmont in San Francisco, Calif.

October 24-28—National Business Show, Office Executives Association. At the Coliseum, New York City. Contact George H. Gutekunst, Jr., NBS, 530 Fifth Ave., New York 36, N. Y.

October 26-27—Computer Application Symposium sponsored by the Armour Research Foundation of the Illinois Institute of Technology, Morrison Hotel, Chicago. Write Andrew Ungar, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

October 31-November 4—Seventh Institute on Electronics in Management will discuss current developments in ADP Systems held at and sponsored by The American University, Washington, D. C. More information from: Dr. Lowell H. Hattery, Dir. SIEM, The American University, 1901 F St., N.W., Washington 6, D. C.

November 1-4—The Business Equipment Exposition, second major equipment show sponsored by the Office Equipment Manufacturers Exhibits, Inc., at the Los Angeles Memorial Sports Arena in Los Angeles, Calif. Write: OEME Headquarters, 777 14th St., N. W., Washington 5, D. C.

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EDITORIAL

Who's Hoos?

We were amazed at the glaring example of undocumented research in the July-August issue of the usually responsible Harvard Business Review, under the title "When the Computer Takes Over the Office."

Written by one Ida Russakoff Hoos, the article purports to describe the effects of EDP on office workers and their jobs. The author is alleged to have spent two years among EDP installations in the San Francisco Bay area gathering her facts. In our opinion these "facts" are just editorial garbage.

Madame Hoos writes of "workers chained to machines—considerable downgrading—job bumping—unimpressive salaries—shrinking opportunities—and truncated authorities." She accuses EDP executives of "pre-empting industrial relation functions . . . ignoring all the ground rules of established organizational behavior . . . and poaching on the preserves of personnel administrators." EDP, she says, displays many characteristics of "trained incapacity frequently bordering on artlessness," and more it "unites functions but disunites people."

The author's ignorance of her subject is perhaps best illustrated by such gems as: "tabulating machines are among the first to be eliminated when EDP is introduced . . . people in the computer room suspect the tab machine group of obstructionist tactics in preparing the cards . . . EDP, reluctant to map out its proposed moves for fear of real or imagined resistance, subscribes to an obscurantist policy of what-they-don't-know-won't-hurt-them."

It appears as though the author first arrived at a conclusion and then wrote a story—discarding along the way any facts that would tend to refute her original thesis. It is apparent that she failed to consult with any responsible individuals in her quest for information. It can only be assumed that she conducted her research in union halls and company washrooms, cloaking her disgruntled informants with anonymity.

There is one clear thought in her presentation. She concludes that: "It is through careful and detailed study of automation in specific areas, rather than broad and conjectural statements, that progress can be made toward a workable solution of the problems engendered by automation and full realization of its benefits."

It is a pity that the good lady did not follow her own advice. However, it now seems incumbent upon the Harvard Business Review to repudiate what might conceivably be accepted by some as valid research.

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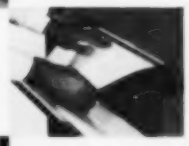
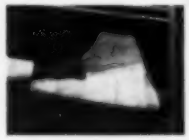


B. Next, inserts sheet of ordinary paper, vellum or offset master material.



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